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THIRTY-FIVE YEARS OF PSYCHIATRY IN THE UNITED STATES AND OUR PRESENT OUTLOOK.*

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In the midst of the daily work of psychiatry we assemble for a week each year to bring together the many representatives of convergent and divergent interests of our field. When, in the course of time, you called on me to be the spokesman for this occasion, the honor thus bestowed upon me roused an urge to take stock, in a way, of what 35 years of psychiatry in America and membership in this Association have impressed upon me. And above all things it roused an urge to pay my tribute to my predecessors and contemporaries. Could the retrospect help us to see our opportunities and the most worthwhile perspectives of to-day?

The field is too vast and the time too short to do justice to what wells up in reminiscences and visions of possibilities. I must limit myself to a consideration of some of the men and trends of this period.

One cannot properly speak of a history of contemporary life. There is too much of the present and the future involved in the form of personal reminiscences and personal hopes which each of us lived and lives with and wishes to see realized, often enough without being able to express what drives or what draws one. Even that which is more than mere hopes, that which is already finished and done, is hard enough to evaluate. There is much that is elusive in the very nature of all life, in the nature of all growth. Wherever we deal with life, we meet with its chances of continuities and discontinuities, with the culminations of the expected and

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the unexpected—with a factor of uncertainty and with the surprises of creative time.

After all, it is not a history as a dead and closed record that I am anxious to share with you this hour, but rather a vision of some of the developments, with perhaps some glimpses of the dawn of a new appreciation of a real natural-history integration of man as opposed to a purely mechanistic or a purely fantastic interpretation, and some ways of finding for the work needed some helpful inducements.

Starting on one's life-work in the early nineties presented an interesting adventure. It was the time when the plans for construction of large hospitals were first fully realized—the growth and organization of the modern cottage plan with its discriminating thoughtfulness of the various needs of the patients. This was part of that phase of trying to solve the most intricate problems of individual health, happiness and efficiency with the help of complex organization—state care and state institutions and state commissions. It meant especially much to have one's start professionally in what was then one of the best samples of achievement, the Illinois Eastern Hospital, the creation of old Dr. Wines and the still young Dr. Richard Dewey. It was a mere chance that my opportunity was not wrecked at the outset in the Cleveland-Altgeld landslide, one of those strange revolutions with which our political life is apt to cut into orderly progress and which are too often condoned because of the appearance of meritorious achievements, which probably would have come anyhow, and perhaps in more orderly form, if that were the way of humanity. Dr. Richard Dewey had to resign the very week that Dr. Ludvig Hektoen brought to my notice his desire to engage a pathologist for his hospital. I happened to know his successor, Dr. Clevenger, who appointed me to begin work May 1, 1893.

Psychiatry was then, as it still is in many places, largely an institutional and legal task. Under the rise of state care it had for some time been gathering from the almshouses and detention houses the persons who proved to be impossible in the community but who were nevertheless in need of more promising treatment than that of retaliation or mere exclusion. Psychiatry could deal with *individuals* only to a slight extent. It had but scant room for an interest in the life-problems of specific persons, and yet it was

getting on the way to our present-day vision of working for large masses and for individuals alike.

It was in the days when real science in medicine was identified with the deadhouse and the use of the microscope and a few other instruments, and when the *life* aspect of pathology in medicine generally had just barely begun to assert itself, mainly in the concept of autointoxications and in the field of bacteriology, and in our own field of psychiatry as a strange and, I am glad to say, transient interest in Nordau's version of degeneracy, and, perhaps in a literary way, in sprees of classification.

The men who were leading the administrative advance of the day formed a few schools or dynasties, that of the "descendants" of the great John Purdue Gray, of Utica, N. Y., and the Michigan branch of the family, Edwin H. Van Deusen (of neurasthenia fame) and Henry M. Hurd, and here and there an outstanding figure like Pliny Earle, the sober statistician, and Isaac Ray with medico-legal and mental hygiene interest, both in the New England region, and some vigorous pioneers in the West and the South, often without "descendants" because of the personal and political peculiarities of the men and the times. Dr. Hurd's history of "The Institutional Care of the Insane in the United States and Canada" and the biographies of groups and individuals, and the history of the institutions in brick and mortar, would furnish us the record of that important practical aspect and phase of psychiatry.

The men then supposed to be in charge of the tools of *scientific* advance were few, but they should not be forgotten.

In the late sixties, at Utica, Dr. Gray had engaged as pathologist and investigator Dr. E. R. Hun (partly microscopist, partly interested in the pulse, etc.), who died early and with all his promise did not reach the fame and standing of his brother, Henry Hun. That this appointment was to quite an extent a gesture to meet the increasingly vigorous critical onslaughts of outsiders and neurologists and not a response to a compelling need and eagerness for investigation might be inferred from the fact that the guardian of the famous old microscope of the institution, Mr. Theodore Deecke, a technician, was considered sufficient to keep the lamp of science burning. Here and there were a few inherently irrepressible inquirers, in due time diverted in directions of greater opportunities: Frank C. Hoyt in Iowa (with a study of hemorrhagic pachymenin-

gitis), finally rising to a superintendency; and Frederick Peterson in Poughkeepsie and F. X. Dercum at Norristown destined for a neurological career although with psychiatric interests. Frederick Peterson came to show an untiring devotion in the furtherance of the psychopathic hospital ideal. His goal was work with and for the living patient, but not so much from the inside of the existing centers and the very heart of psychiatric work of the rank and file of existing hospitals and their physicians, but through the creation of centers in cities and help from consulting staffs. The most productive and faithful workers in the laboratory as well as in the wards had been or were Joseph Workman in Toronto, who first (in 1858) in America drew attention to paresis, and W. L. Worcester, a man who studied medicine while in the Bureau of Pensions in Washington, with a strong inner drive for advancement and service to the cause, but with a sad and unhappy vein and not without some pardonable embitterment over the scantiness of recognition in his career as a worker in Michigan (1878-1888) and Arkansas before he came to Danvers, Mass. (1895-1901). His work on the lesion of the cornu ammonis in epilepsy, his review and recognition of William James' work, and the final preparation of the ground in Danvers stand out as samples of the best efforts of his time. I. W. Blackburn, at the Government Hospital in Washington, for a long time remained the seeker of salvation in post-mortems, more as a collector of material than as a formulator of principles which might in turn have affected the work with the living.

Besides these representatives of official psychiatry, there was, moreover, the interesting group formed by the elder Spitzka in New York, the author, in 1883, of a meritorious text and an investigator in comparative and experimental brain anatomy, and his pupils Kiernan and S. V. Clevenger (in Chicago). Then there was the more strictly neurologizing group which in 1874 formed the Neurological Association, men of greatly varied interests—among them the physician and novelist, Weir Mitchell; the organizer of clinical neurology, C. K. Mills; the creators of the functional neuroses, Beard and Dana; the humanly and philosophically inclined neurologist, Putnam; and figures like the elder Hammond, who wrote one of the early texts (1883), or a gifted teacher like Moses Allen Starr, and Allan McLane Hamilton, the medico-legal

expert. The pioneer Jewell in Chicago had already passed on, and the editorship of the *Journal of Nervous and Mental Disease* had come to H. Brown, and that of the *Journal of Insanity* rested on Bannister (Chicago) and Blumer (Utica) and, later, on Hurd and Brush (Baltimore). James H. McBride's *American Journal of Neurology and Psychiatry* had endured but two years (1882-1883) and his *Review of Insanity and Nervous Disease* from 1890 to 1894. The *Alienist and Neurologist*, published in St. Louis from 1880 to 1917, was edited by Charles H. Hughes.

In 1893, the year when I was initiated into the ranks of psychiatric workers and admitted to membership in our organization, what was then "The Association of Hospital Superintendents" transformed itself into the "American Medico-Psychological Association," after the English terminology, with the face of our patron saint, Benjamin Rush, on the seal of the organization.

To get a real picture of the psychiatry of the day, we ought to turn to the standards of work with the large groups of patients and the practice with individual cases outside of hospitals, and the discussions of the meetings and the journals of the day, the textbooks, terminology, and the conditions for practical success in careers. Most of the successful workers of those days were definitely self-made, with very little opportunity for training. The texts were in part reflections of the theory rather than the actual practice of the day, in part of foreign origin. Works by Clouston and some English writers, including H. Tuke's *Dictionary*, were the most widely owned books, and the translations of Régis' *Manual* (1894), and of Magnan's study of "Chronic Delusional States with Systematized Evolution" as separated from the degeneracies, formed the main connection with the French (under Blumer's influence). Spitzka (1883) and Berkley (1900) approached psychiatry more under Krafft-Ebing's influence and Chaddock translated Krafft-Ebing (1904), after the Kraepelinian wave had got well under way.

The fiftieth meeting of this Association in May, 1894, in the midst of reasonable satisfaction with existing conditions and developments, brought something of a storm in the form of the memorable Philadelphia address of Weir Mitchell. The picture he drew reminds me of Reil's *Rhapsodies*, written in 1803. Mitchell's oration was a rhapsody in the fine original sense of the

word—the song or recitation of a bard. It was not primarily based on a study of the facts, but expressive of a lofty (although not any too understanding) criticism and a conception of how he would arrange an institution.

Weir Mitchell's was one of the bursts of vision of a day when here and there action was under way, especially at the McLean Hospital and in New York State, hardly as yet appreciated in Mitchell's memorable retrospect and prospect (published in the June number of the *Journal of Nervous and Mental Disease*, 1894).

To me, Weir Mitchell's address was a spur in more than one way. So far most of the scrutinizing of the status of psychiatric work seemed to be coming from the outside, as during the strife between the New York neurologists and the giant who held the fort at Utica (Dorothea Lynde Dix had been interested largely in the attitude of the legislators). I sent to Governor Altgeld a copy of the speech of Weir Mitchell and urged a move from within, making the suggestion that even more profitable discussion might come from the workers themselves. The resulting printed public document led to the first open examinations for internships in state hospitals, which brought Dr. Podstata (now of the University of California) into psychiatry.

Among the men most definitely active in institutional reform and also in a specially important way in the intrinsically psychiatric development, Weir Mitchell had failed to note Edward Cowles, our president at the Denver meeting of 1895, who had been inspired by what he had learned with Dr. Butler at the Hartford Retreat and as superintendent of the Boston City Hospital and, after his connection with the McLean Hospital in 1873, especially through contact with the professor of philosophy and psychology in Johns Hopkins University, Stanley Hall, later president of Clark University, and the physiologist Lombard, and their pupil Dr. W. A. Noyes (1889-1892).

Another important tendency that had escaped the Philadelphia bard's attention was what was getting under way in New York State, through the personality of Ira Van Gieson. Van Gieson's was an enthusiastic temperament. He may well have been inspired in part by Henry Fairfield Osborn's examples of a truly biological neurological morphology, and partly by a schooling in the pathology and technique of Weigert (with the combination of pic :

acid, and fuchsin and hematoxylin acid) and by the stimulus of the neurone-theory of His and Forel; and he had all the ambition of one who was favored by the wealth of the Empire State made available through the indorsement by the powerful practical organizer, C. F. Macdonald.

In the second annual report of the New York Lunacy Commission Macdonald's predecessors (1888) had spoken quite characteristically for those days of the "opportunity furnished by unclaimed bodies in the hospitals of the state, to make careful post-mortem examinations, both gross and microscopical, and to record and tabulate the result of the same for the benefit of medical sciences."

It must have been Van Gieson himself who outlined the recommendations of the seventh annual report of the Commission (1894, p. 58), as follows: "The aim being to provide for the exhaustive study of the causes and conditions that underlie mental disease, from the standpoint of cellular biology which is now elevated to the dignity of a special science, also to provide instruction in brain pathology and allied subjects to the medical officers of the state hospitals and other members of the medical profession."

This development culminated in Van Gieson's vision of the Correlation of Sciences, a conception of synthesis formed by a man approaching a subject from the outside, without schooling through personal experience and responsibility in dealing with the problems as they occur in actual contact with patients. Beginning with the exposure of the artefacts produced by the usual carelessness in removing the spinal cord, Van Gieson approached mental disease from a study of the *elements* as he knew them. I well remember meeting Van Gieson for the first time in 1895 when on my way from Illinois to Massachusetts. He showed me a little booklet in which he had noted 48 mainly neurological and biological problems to be worked out. And out of the elements he made in a remarkably comprehensive manner his picture of the Correlation of Sciences, in which there were unfortunately two fatal gaps: He had no place for man as we know man, *i. e.*, not as a sum of elements but as a real specific unit; and he had no place for psychiatry as we know psychiatry at work. He created a summation of sciences, not an integration of psychiatric work. His fate in a way was strongly influenced by his associating with himself a pupil

of William James (and indirectly of Janet), Boris Sidis, who brought with him an interest in hypnosis and who developed a concept of "moment-consciousness" and the principles of "neurone-retraction theory," before he had taken pains to digest what we know of man as we know him from actual, reasonably wide experience, and what we know of psychiatry as we meet it every day. The traumatic amnesia of the case Hannah, the 1896 experience with sunstroke, Onuf and Collins' experimental work on the sympathetic, Herrick's anatomy of the fish brain, Ewing's study of chromatolysis linger in my memory. The State Hospitals Bulletin (1896-1897) and the short-lived Archives of Neurology and Psychopathology (Vols. 1-3, 1898-1901) are the lasting record of this early New York development. At the meeting of the American Medico-Psychological Association in New York in 1899 (at which William A. White reported on Alcoholic Amnesias), there was the first open demonstration of a lack of natural blending between this Institute and the needs of active psychiatry.

In the meantime the laboratory at the McLean Hospital had passed from under the influence of Stanley Hall's first suggestions, that is, Lombard's and Noyes' interest in the knee-jerk, to August Hoch's early interest in the ergograph and other methods derived from Kraepelin's work-curve psychology; and I well remember, as an example of the diversity of expectations from a laboratory worker of those days, a task waiting for him on the shelves—a collection of desiccated feces to be analyzed chemically by him (the aim being to find the disease in pure culture), and also the beginnings of a histological workshop. But after a while, from 1897, there came an increasing focussing on the part of Hoch on Kraepelin's diagnostics and on Nissl's histological work.

Dr. Edward Cowles himself had the fateful desire to keep psychiatry as such by itself. Somehow he had espoused the Zeller-Neumann-Kahlbaum concept of a unitary prototype of insanity viz., the notion of a kind of general pattern, figuring most mental disease in terms of a sequence beginning with melancholia, then possibly a passing into mania, with "confusion" as the next deeper stage, and finally, if the process did not stop, a passing into dementia. This supposedly general (vesania) pattern had received a supplement in the Cowles formulation. From 1885, Cowles looked upon the new American disease, viz., neurasthenia or

neurasthenic exhaustion, as the necessary introductory phase of the four major steps constituting real insanity. This formula of the stages of nervous breakdown, with a possible sinking to the level of melancholia, next into mania, and often into confusion and finally into dementia, was bound to remain on a kind of exhaustion, poor nutrition and metabolism level, with a dash of intoxication playing a rôle. This theoretical and practical tendency of the chief hardly provided the best soil for the fertile efforts of Hoch in the search for specific processes of disease along the lines of his largely Kraepelinian psychiatry. On the other hand, Dr. Cowles rendered a great extraneous service to biochemical science in this country by adding Folin and Schaefer to his force. Folin's sound judgment saved American psychiatry from any premature illusion with regard to chemical solutions. (A full account of the McLean Hospital ideals by Cowles himself is found in Hurd's History, Vol. II, pp. 618-636.)

It was at the first meeting of this Association I attended, the 1895 meeting in Denver, that I was looked over by Dr. Cowles as possible material for Dr. Quinby in Massachusetts. I had ventured to seek some vital meaning in the presence or absence of satellitosis in the dead structures of brain-sections (*AMER. JOUR. OF INSANITY*, Vol. 52, pp. 243-249, 1895-96). I soon received an invitation to try my hand at work with 1200 patients, at the Worcester Lunatic Hospital, at first with a staff of only four co-assistants, but from October, 1896, with four additional junior men assisting the senior assistants. Although I was engaged under the name of pathologist, I had become more and more determined to make the living patient the center of my interest, with all the controls which conditions would permit. Cowles' McLean plan and the Worcester plan came to differ fundamentally, as they both differed from the New York plan. The New York Institute kept aloof from the hospitals as a superior research institute might be apt to do. The McLean Hospital favored a small practical administrative staff, and developed its laboratory and research departments distinctly apart; whereas the Worcester plan aimed to make the practical work with the rank and file of the staff the real foundation and goal of its endeavor—the principle of a chain being as strong as its weakest link applies also to any progress to be aimed at in sound psychiatric work. The fate of any real and

lasting growth would depend on the soundness of a certain kind of base line, or a basic minimal standard even for the average activities. The admirable letters of Dr. Hosea M. Quinby, who provided me with my opportunity, gave me a free hand, without routine duties even in the matter of autopsies, as he favored my selecting special cases for study. I might have yielded to the temptation to occupy a throne of privilege with the risk of splendid isolation, but my first concern was the creation of a sounder average level of the medical and psychiatric work as a whole. I did not feel as if I could claim such insight as would enable me to choose from cases in an initial stage those that would necessarily prove interesting when they had reached the end-stage. And while I used the stimulating new concepts that came from a short contact with Kraepelin during the summer of 1896, I was not swayed into any idolatry of dogmatic nosology, and away from my earlier determination to study the facts as I might find them and for the factors at work in them—the most important result of my novitiate of two and a half years at Kankakee. To me, the facts of each case were more important than the assumption of as yet problematic disease-processes. A review of the fifth edition of Kraepelin's text reflects my attitude at that time (*AMER. JOUR. OF INSANITY*, Vol. 53, p. 298), and also a summary review of Van Gieson's and other concepts in 1897 (*AMER. JOUR. OF INSANITY*, Vol. 53, pp. 538-549, 1896-97). Regular rounds covering the entire hospital every week, and regular daily staff-meetings, raised the work from routine to a level of growing interest in the wide range of real cases. The articles on the psychoses in Baldwin's *Dictionary of Philosophy and Psychology* (1900) and the article on the Pathology of Insanity in the *Reference Handbook of the Medical Sciences* (1901) and the annual hospital reports (1896-1902) give an idea of the developments.

At the beginning of the twentieth century, within six years after Weir Mitchell's address, there were quite a number of centers of activity. These were perhaps not exactly such as Weir Mitchell had depicted, but there were hospitals, we may safely say, doing fair justice to their opportunities in so far as the policy of their states permitted, and several centers of more or less special growth. There was Dr. I. W. Blackburn of the old school, who still limited himself to his autopsy service (and many an institution would have

considered that enough as a contribution to science; but in most places the aims were more pointed); there was A. P. Ohlmacher in Gallipolis, Ohio, actively interested in the lymphatic constitution in the epileptic; Dr. T. O. Powell in Milledgeville, Ga., willing to put a division of 600 patients under the control of a pathologist, had engaged Dr. T. E. Oertel in 1895; Dr. Worcester at Danvers was clearly reaching somewhat into the clinical field with a study of confusional insanity and other conditions, but continuing his laboratory work; Dr. A. M. Barrett in Iowa was getting ready to extend his training obtained in Iowa, in Kankakee and Worcester, in Germany; Allen Ross Diefendorf in Middletown, Conn., a member of one of the first groups of junior assistants at the Worcester Hospital, had written his American adaptation of Kraepelin's text, and was working with Raymond Dodge on the eye-movements in dementia præcox. The major enterprises of the McLean Hospital, the New York Institute, and the Worcester State Hospital, Mass., were flourishing; the Bellevue Pavilion and Mosher's Pavilion F at Albany, both attending to local needs beyond the state hospitals—and no doubt other centers and efforts—should deserve notice.

It would be interesting at this point to compare these American beginnings with the doings in other parts of the world, the contemporary work of Frederick Mott, Watson, and Bolton in England and that of Ford Robertson and Lewis Bruce in Scotland and the many developments on the continent in nearly every country. The contact with Germany was clear enough; that with France was for a time cultivated by Louise Rubinovitch.

The first decade of the twentieth century brought a number of new fruitions, and in a way new groupings.

1. The Worcester plan was incorporated in the policy of the New York Institute in 1902, partly through the efforts of the New York State Lunacy Commission and a committee of superintendents (Dr. Charles Pilgrim, Dr. Arthur Hurd and Dr. Howard) and the determination of Dr. Frederick Peterson, and partly owing to the reluctance of the Massachusetts authorities to heed Dr. Quinby's request for a frank indorsement of the somewhat costly organization at Worcester. The state of psychiatry at the time when this new advance began is summarized in the "Review of Recent Problems in Psychiatry," published in the editions of

Church and Peterson's "Nervous and Mental Diseases" appearing during the first decade of the twentieth century, and in another form in an annual number of the Psychological Bulletin from 1904 to 1910. The pivotal committal to a personal standpoint of my own took a definite form in 1903 in my first formulation of the adolescent and especially of the constitutional types of make-up and personality-types, leading to the concept of habit-disorganization as one of the topics of concern in psychiatry.

2. The original organization of the New York Institute was by no means "destroyed," as was claimed by some; the Institute was continued with all it had collected as a privately supported institute of Van Gieson and Boris Sidis. The latter, however, soon turned to the study of medicine in Boston and with the help of William James developed an institute employing methods in some ways similar to the methods of Morton Prince, but dealing more with the minor psychoses than with multiple personalities and the study of the co-conscious, Prince's special interests.

3. Another tendency or movement made itself felt in the work of William A. White and Smith Ely Jelliffe, the neuropsychiatric twin brothers, who started in the Van Gieson and Sidis days of the New York Institute, but who were destined to become the exponents of the psychoanalytic as well as a broader neuropsychiatric growth, at the Government Hospital in Washington and in New York.

Every one of these developments marked a growth of interest in the living patient—clinical, psychopathological and dynamic. The emphasis on the living patient became the central characteristic of the American movement destined to reach its culmination in mental hygiene.

In the meantime there had developed the first instance of the detached *psychopathic hospital* so enthusiastically advocated by Frederick Peterson and courageously and unselfishly realized at Ann Arbor by the neurologist Dr. Wm. J. Herdman and started under A. M. Barrett (1906), and since then in the Psychopathic Hospital in Boston (1912), to be followed later by the Psychopathic Hospitals of Iowa City and Denver, Colo.

In Baltimore in 1908, the untiring efforts of Stewart Paton bore fruit in winning over Osler and Welch, and through the munificence of Henry Phipps the Psychiatric Clinic was opened in 1913.

Moreover, under the administration of men like William A. White and Henry A. Cotton, several state institutions came to equal and even to excel in many ways the efforts of the more privileged private hospitals.

Toward the end of the first decade of the twentieth century and especially during the second decade, a new force came to assert itself. Under the guidance of the Harvard pathologists Councilman and Mallory, Elmer E. Southard prepared himself along the lines of his more exclusively pathological-anatomical and experimental interests. He had what might have been his psychiatric apprenticeship at Danvers, Mass., as pathologist, succeeding Albert M. Barrett, who had followed Worcester. Dr. Charles W. Page of Danvers, through associating with himself Dr. Diefendorf while in Middletown, Conn., had become acquainted with the Worcester plan of daily staff conferences and on his return to Danvers continued the daily staff conferences begun by Dr. Harrington in 1899, and the plan was henceforth happily used there as a diagnostic checking-up system by the primarily organicist spirit of Southard.

Southard started out with an unusual intellectual endowment, going far beyond what made him the champion chess player he was. He had a very outgoing, bubbling temperament, and a great talent—to use his own word—as impresario, and as collaborator. He was of remarkable versatility and mobility, and bent on developing “techniques” in all kinds of directions. Southard developed a unique career and attracted a large number of co-workers of kindred temperaments. He made many an application of principles often quite extraneous to psychiatry, with interesting emphases first with a study of the experimental infections of the central nervous system, and the anaphylaxes; then with his belief in his brain spot theory of dementia præcox guided by gross palpation of the brain at autopsy and a quest for specific focal disorders; then came the discussion of the normal-looking brains and the brains of specific decades, the fifties and the sixties, the application of grammar and logic to symptoms and classification, etc. The Southard Memorial Number of the Bulletin of the Massachusetts Department of Mental Diseases (Feb., 1920) shows an absolutely unique performance. Yet one is tempted to say: Never was there more psychiatry with so little psychiatry in the ordinary sense of study of mental disease as seen in life. On the other hand, there

also was a remarkable stimulation in many directions of new efforts.

In 1912 Southard entered upon what he had been scheduled for, the direction of the Boston Psychopathic Hospital, the creation of Dr. Vernon L. Briggs and Dr. Owen Copp; and there followed a rapid expansion from the well-supported and well-organized brain studies to the intensive clinical and literary work in neurosyphilis with Dr. Solomon, to the compilation of the World War experiences, and to the interest in the social aspects of psychiatry brought to expression by Miss Jarrett in the posthumous publication of "The Kingdom of Evils," and the extension of his interest in the training of social workers into industrial hygiene in the lectures to the Engineers' Club. He did not allow himself to be tied to work with patients. He prided himself on being the only psychiatrist with only one private case. His presidential address of 1919, shortly before his premature death from pneumonia, is one of the most typical expressions of his mind and spirit. But just this contribution makes me wonder whether he would not, after all, with personal responsibility for more individual patients, have come into closer agreement with me on putting a group consensus above his emphasis on individualism which he put so strongly to the front in this presidential address (AMER. JOUR. OF INSANITY, Vol. 76, p. 108).

In the meantime the New York State hospitals had espoused to quite an extent the Worcester plan and with it had laid the foundation of interest in the personality of the patient and physician, and at the same time provided for the cultivation of the basic controls of work through laboratories. The *dynamic conceptions* at the bottom of the objective natural-history attitude offered an open mind to the consideration of psychopathological and psychoanalytical developments without being swept by the latter, and at the same time a wholesome and practical basis for the mental hygiene movement organized by Beers and later by Salmon's unique talent and nature. On the practical side, under the commissionership of Peterson and Ferris, Wm. L. Russell drew the *general health officer* of the community into the care of the insane pending commitment (1909), and under August Hoch's inspiring guidance the New York Institute turned more than ever in the direction of clinical psychiatry.

The same period shows the rise of Healy's and Bronner's work in Chicago and later in Boston; and, as mentioned before, Herdman's Ann Arbor Clinic under Barrett, and the Phipps Clinic during its difficult first 10 years; the Government Hospital under White; the independent collaboration of White and Jelliffe; the fertile activity of Kirby and MacCurdy with Hoch at the New York Psychiatric Institute; then the more individual work of Kempf in Indiana and at the Phipps Clinic and later at the Government Hospital in Washington and in his private work since; the development of Orton's work in Massachusetts, Philadelphia and Iowa; the rise of Bond and Strecker in Philadelphia, and later that of Ebaugh in Philadelphia and Denver.

We now turn to a period of the beginnings of extra-mural psychiatry.

Taking up the last 10 years' development, I want at once to give due credit to an important aspect of the personal developments. I have always considered it unusually good fortune that somehow from the beginning I was taught to appreciate the institutional experience with psychiatry.

There has been a tendency to belittle the so-called asylum practice and to see the glory and future of psychiatry largely in the laboratory or in the extra-mural work. Anyone who has not a fund of experience in hospital as well as extra-mural work has a definite handicap. I shall always be grateful for the opportunities given me by the larger institutions, and I shall never cease working against any idea that admission services and admission hospitals and extra-mural work will make of the larger state hospitals a merely custodial affair, as Governor Odell hoped they would when he seemed to advocate a psychopathic hospital for New York State in 1903. I always did and still do consider the large hospital in the country a place of most important work and as a rule the place of *central interest* in any district, with increasing rather than diminishing importance for training and for getting experience in the service to the communities—provided that some type of *district concept* can prevail, and that these hospitals are sufficiently officered. In the end, these larger hospitals do teach us a great deal in the way of perspective and relative value of our efforts and demands.

Fortunately, the heads and chief workers in American institutions have always been physicians. (We must not forget that as late as 1894 a group of ministers wanted to be put in charge in Germany!) And fortunately our physicians—as the practically trained persons they usually were and are—have proved able to adjust themselves to decidedly multifarious problems. In the earlier days administrative problems were no doubt uppermost and the needs of the patients seemed relatively non-medical. A growing vision and understanding of the needs of individual patients and their demands, especially in hospitals largely for voluntary admissions, put before us also the more personal problems of psychiatry to be mastered. Along this line the last decade has brought many ventures calling for readjustments.

In Kankakee, in 1893, there were six assistant physicians to 2200 patients and one of these, temporarily acting superintendent, proudly claimed that he could do all the medical work alone if necessary.

In Worcester I became the fifth member of the staff of four attending to 1200 patients and 600 admissions a year, myself supposed to be free from routine. I obtained the doubling of the staff, whereupon one of our medical visitors asked me: "How do you keep the boys busy?" I never had any worry on that point. To me it was a question of how to give these men and women a sense of satisfaction with their work, some fruitions and results, some happiness out of psychiatry. My own work then was largely limited to the hospital and to the staff and to some teaching before the Clark University graduate students in psychology.

The intrinsic interest in the study of patients soon called for a further expansion of my interests, but without disturbing my original orientation and convictions.

In New York my first goal was that of establishing from the start a basic standard of all our hospital work. In harmony with my dynamic conceptions of most mental disorders, I had to reach out, in my actual work, more and more toward a broader understanding of the patients, which led me to a study of the family-settings and by and by also of the place where the individual first becomes a member of the community, the school. I might also have looked to the church, but since that was too much split up, there seemed to be less hope of achievement.

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From 1904, with the help of Mrs. Meyer, the life of the patient and of the family, the life of the patient in the hospital, and the return to the community began to receive more practical attention. In 1905, to head off an antiquated patronizing after-care scheme, we offered home-visiting and obtained probably the first psychiatric social worker (see the reports of the New York State Lunacy Commission, Nov., 1905, and Jan. 30, 1906). To enter into the life of the patient we added work on the ward to the existing shop and menial work of making beds and running the floor-polisher and the old institution of maintaining rows of wallflowers. With the help of Miss Burchenal folk-dancing was introduced for group treatment and group pleasure. To get a sense of the opportunity afforded by the schools, I looked into what our patients had shown in their school days. All this tended to give a more concrete meaning to what is at work in psychiatry, intrinsically incidental to the needs of treatment and teaching and investigation in the Ward's Island days.

A different kind of extension beyond the hospital came through the interesting contribution of Clifford Beers (1907), and not so far apart from him, the stimulus of Vernon L. Briggs. They led me on touchy ground, but I saw some real needs and opportunities and real chances for betterments. Yet I also realized that I was becoming what Southard later on described me as being when he gave me in his presidential address, the changeable-silk kind of compliment of having been a "ferment, an enzyme, a catalyzer" in the third quarter of the life of this Association, but evidently one that made Southard put it in his humorous manner: "I don't know that we could abide two of him. But in our present status we must be glad there was one of him." Pathologist as he was, he must have viewed me like a disease rather than like the sap of spring, something to be put up with, and having to be handed over to the ultimate pragmatic estimate of the psychiatrists (*AMER. JOUR. OF INSANITY*, Vol. 76, p. 108).

Vernon L. Briggs found me with a hope that pending the construction of the Phipps Clinic, I might get time for a detailed study of the various systems of care, as I then did with the Massachusetts plan in 1912. I wanted to review the Wisconsin plan, the Pennsylvania plan, and others—studies which were soon actually undertaken by Salmon, Kirby, Haviland, and others in different states.

It was our unforgettable Thomas W. Salmon who took up the leadership in these directions about 1915. Our first survey of the school population in the Locust Point district in Baltimore (1914), directed by Dr. Charles Macfie Campbell, initiated a period of a nation-wide pursuit of surveys. Then came the war, which took away nearly all our male physicians and brought out a number of momentous developments which were bound to unsettle the perspective in many ways. Foreshadowed by the work of Goddard (one of our graduates of Clark University) and that of Healy and Bronner in Juvenile Court work and the surveys of the National Committee, there came a definite expansion of usefulness in the field of *medical examination for efficiency* through the inclusion of mental testing by the psychologist and psychiatrist, and, largely through Salmon, a utilization of our resources in personnel and equipment for a psychiatric organization such as probably no army had obtained before. The tremendous effort to provide psychiatric helpers, together with the contemporary rise of the popular side of psychoanalytic propaganda, and the sympathy for the psychiatric victims of the War which kept them out of ordinary institutions, caused a decided shifting of interest at a time when genuine psychiatric research and practice had just barely begun to establish itself. I might illustrate this with my own case: I found myself engaged in the development of a but partly supported private university hospital for study and treatment and teaching and research with an organization that had to be maintained at a level of expense putting upon us the serious responsibility of earning from 60 per cent to 70 per cent of our support from our exclusively voluntary patients—an economic situation quite different from what I had been accustomed to.

As a matter of fact, I should have liked best a model community hospital as a basis for service, teaching and research. But even for a simpler start, the communities were hardly as yet prepared to sense a real need and to furnish the means. Nor were conditions ready for a normal expansion into the psychiatric problems of school, courts and industries, as a well-balanced collateral department of a School of Hygiene; no funds were obtainable, nor even a recognition of any urgency on the part of the medical leaders brought up in the narrowing mind-shy and man-shy mechanistic philosophy of the nineteenth century. The interest of philanthro-

pists was swayed in a direction away from the rank and file of outspoken psychoses as something supposedly hopeless, to a supposedly preventive activity and reform of family and sex-life and what not—efforts important enough, but bestowed to a large extent upon material that is difficult to control and to evaluate.

There came a period during which experience with our psychiatric hospitals or institutions was almost in danger of being considered a prejudicial handicap in the eye of the promoters and the public, and during which only the latest popular conceptions of psychology and psychopathology and psychoanalysis were apt to be received as possibly worth while and measuring up to the standards of scientific expectations. The solid well-controlled and sound work in the most workable field of psychiatry was temporarily eclipsed by meritorious work in more popular but little controllable spheres. We are only just beginning to return again from a period of inflation to one of well-balanced and well-organized resumption of the normal course of growth. But here history ceases to be history. All the more reason not to be hasty in dreaming of a new psychiatry ignoring the well-tried past. The hospitals which receive the more difficult cases will always give us in the end a means of checking up on the actual attainments and the economic and medical values of the various efforts, and they still are getting more crowded rather than the reverse.

Looking backward over this historical outline, I cannot help seeing the gradual growth and fruition of what I would call a broader and more genuine comprehension of the real nature of psychiatry. We are getting to closer quarters with the facts that count—with a frank determination to study the facts that constitute nature's experiments on man, and to study them as we find them without bewildering and confusing preoccupations. I am anxious to discuss two aspects: How can we bring the issue before the student and before the layman? And how can we make it clearer among ourselves?

We evidently cannot speak offhand of "the" psychiatry—as little as we can speak of any exclusive brand of any other field of human endeavor. But we are getting closer to a more liberal and truer conception, just as we are getting a more real conception of what psychology might be—a more and more *objective* realization of so many matters formerly left to a vague intuitional kind of comprehension.

In my psychobiology course with which I try to set the beginning medical student, steeped in anatomy and physiology, "a thinking" of what unfortunately figures only as mind and soul instead of mentation, a special range of functioning of the whole live organism, I begin with the request: "Give the stages of evolution of your own personal attitude with regard to the nature of 'mind' from childhood up and your understanding as to the nature of the facts dealt with under the heading of psychology."

Similarly I feel like asking every inquirer, student or worker in psychiatry: What has been the evolution of what you thought psychiatry was and is?

It seems to me we might get closest together on what psychiatry means *in* and *to* each of us and in general, if we could pool the various stories of how it came to mean anything to each of us. We should probably find that much depended on a kind of light that would dawn or a vision that would form of what counts in psychiatry.

I had not till last week considered how during my early medical training while assisting my uncle in vacations and free time, I myself was often called as physician to a small institution that really was a small cotton mill in which about a hundred or less demented women were employed and cared for; and I had to see them occasionally for their inter-current diseases. I knew they were abnormal; but I do not even remember thinking of them as insane; they simply were "not all there" but could work in this factory-poorhouse. For one who was by no means indifferent to the "mind and body problem" and to the brain and who was interested in the clinical demonstrations of Forel, and also in general sympathetic and understanding in the contacts with most of his patients, it certainly is significant that I do not remember one single effort to learn to know anything about the patients in that factory. That part must have looked irrelevant, none of my business. My work was limited to the bronchitis or the gastro-intestinal upsets, or the giving out of the heart or kidneys, and nobody asked or told me anything about the patient's personality. That aspect simply did not seem to exist or it was passed by. Had these patients required attention for something involving their personalities, such as occasional aggressive mental symptoms, recrudescences of hallucinations and the like, they would no doubt have aroused me out of my indifference,

although, when I think of the patients seen at that time even in the actual psychiatric clinics, I am not so sure that I saw as much of a bearing on a better understanding of man in general and of the specific patient in any such way as the first thought of psychiatry would suggest to me to-day. The cases seemed rather remote and more a matter of diagnosis and immediate management than of understanding and more general guidance. Yet I was one of those naturally with a real curiosity and interest in human beings and in neurology and psychiatry and with a need of seeing broader relations. How was it that a practical vision of psychiatry took shape with me so slowly? Psychiatry became real to me only when the concepts and the experiences with its facts and problems became clearer and more concretely related to life interests; and especially when I had to handle patients whom I also had known without the mental disorder and who were viewed not as mere derelicts but as persons to be readjusted. No doubt the interest became more insistent when my coming to this country helped with many other factors to precipitate a serious depression of three years' duration in my own mother, who had always appeared as one of the sanest persons in my experience and who recovered against the expectations of my old teacher, giving me many an opportunity to incorporate well-known human facts in my more strictly medical thought of the time.

The full urge started with concrete work, when I obliged myself to treat and to study patients and to discuss with my colleagues what we had before us. I take it to be one of the important tasks of my life to make sure that students and physicians and the public can, more quickly than I did, get a natural sense and interest and curiosity and determination to *know* when and how those human problems come up which even to-day are largely dodged by medical and general training but which may complicate or undo the chances of many a good start in human health and success. There is something intensely human about the transformation of mere aggregates of chances into a vision and use of opportunity. We can remain physicians at one level or the other; we can use our experience or just follow routine; we can either put together our observations, efforts and results, or just repeat and use what others say, and what we have got into a way of thinking and doing ourselves. And in the end we go about as far as the setting of which we are a part will permit.

We need progress in detail but also progress in a broad grasp of what we want and what we have to work with. How many students, how many workers, how many public leaders and distributors of public funds, how many philanthropists to-day realize what psychiatry is and works to be? How early, how quickly, and with what degree of truth and dependability, are we getting it across to the student, to the average physician, to our assistants and pupils, to our neighbors?

I have several times referred to psychiatry without psychiatry—it would be like human life without a goal; or a book without a topic, or effort without a purpose. Psychiatry, like any other pursuit of any complexity, must have its intrinsic and not merely accidental sense and goal.

Let us recapitulate some of the successive ways of looking at psychiatry.

Psychiatry to John P. Gray consisted in a big quantity of shrewd common sense which he tried to keep out of discussion by expounding his fundamental doctrine that "mind cannot become diseased; all real disease is physical"—true if we may ask how much of what is physical must, after all, be expressed in terms of what we call mental. A stereopticon demonstration he gave before the Association in 1878 meant a demonstration of dead specimens; after that the interest slipped into the hands of good old Deecke (see Hurd's History, Vol. I, p. 38). That was not facing psychiatry.

Weir Mitchell wrote on fat and blood and dreamt of an ideal institution. His wealth of common sense was not absorbed in his science and in anything that could be called communicable psychiatry.

Edward Cowles came closer to the mark, but his was a very complicated type of mind when he tried to get square with the neurasthenia-melancholia-mania-confusion-dementia tune of psychiatry he developed out of an importation from Germany, and even in his latest outline in Hurd's History.

Van Gieson under the spell of cell-biology and the neurone doctrine was swept into Boris Sidis' type of elementalism, moment-consciousness, and neurone-retraction theory, and he had nothing but scorn for the psychiatric work as done.

White and Jelliffe became writers and enthusiastic exponents and expanders of a wide range of knowledge and especially of the psychoanalytic (unfortunately too denominational) doctrine. With many others, as with Kempf and Hutchings, the driving interest came with the espousal of the Freudian mechanisms. Hoch combined Kraepelinian nosology and the viewpoints of Jung and inspired Amsden in the direction of personality studies. Southard was the more genius-like inventor and applicer of techniques to something not clearly enough focussed, neither institutionally nor practically, in the handling of specific patients except finally in psychiatric social work. Salmon, big sympathetic soul that he was, lived his experience in broad contacts and in the intimate helpfulness to his colleagues, and to many patients and families, in true mental hygiene, largely non-technical. Barrett remained longest true to an organicist tendency and even more so, Orton, but with definite functional fruitions; while Henry A. Cotton pushed his work from a descriptive histological and biological-genetic to a therapeutic level in the treatment of paresis and focal infections. The group which was tempted to get at it all largely through child guidance, considered as prevention, used a cooperative plan developed during the War, bringing together the psychologist, the social worker and the psychiatrist and the child and the parents, to my mind with the danger of using too largely the doctrines of mechanisms and techniques. They have the advantage of working in an atmosphere of hope which it takes lifetimes to test, but which in the meantime can count on the ever warm interest in the child, and they have done a great educational work and have greatly furthered a real interest in child-study and child-problems.

My own preoccupation became the individual patient examined and discussed in staff meeting and considered as an experiment of nature, with special attention to the modifiable factors, and followed to an adjustment or, in case of death, to autopsy and beyond autopsy, with a study of reaction sets and the factors at work. I was greatly stimulated by having to teach first psychologists and later medical students. We aim to single out non-dogmatically, with a pluralism guided by an integration concept, the facts and factors that prove intelligible, controllable and workable, more and more concrete and replete with manageable components.

With Kirby and Campbell and Barrett, with Strecker and Bond and Orton and Ebaugh, with William A. White, Kempf and their group, and with an increasing number of younger workers, American psychiatry may well look to the future with confidence and great hopes.

In the historical sketch I have thus tried to outline, the general evolution seems to have been: First, humanitarian work in the institutions for the insane and legal preoccupations about insanity for the protection of patients and public; then a study of what it all *might* be in the light of the old contrast of physical *vs.* mental disease; then we find the appeal to cell-biology and correlation of sciences; more and more a study of the plain facts of the history and the reactions of the patient and of habit-organization and disorganization (or, to use the latest scientific slang, "conditioning" and "fixation"); the combination of mass treatment and individual treatment; and with it all the cultivation and conception of a psychopathology; first perhaps as more or less critical common sense; then a more erudite and specialized system of hypotheses, that which grew around the experiences and concepts of hypnotism and hysteria and later katharsis and resistance and repression and release and various developments of a Freudian nature; simultaneously the development of Kraepelian nosology, and on the other hand the singling out of constitutional types and reaction sets with confidence in a background of biological and normal everyday critical common sense. To-day we use this critical common sense as "controlled experience with the experiments of nature" first and last, and solid training and proficiency in the entire field of intensive study of the various levels of integration, structural and functional—with total function (psychobiology) and part functions (physiology)—and physico-chemical, individual and social. We work with the facts contained in the life history and family history and the results of our examinations, with the individual assets and maladjustments, and the individual and social adjustments open to us.

There are important groups in medical and lay quarters of the greatest influence which claim that they do not understand what is meant by psychiatry, mental hygiene, psychopathology and neurology. Neither they nor anyone else should expect to get clearness by mere intuition or mere discussion of words, nor can we expect

to make ourselves clear unless we can get an opportunity to demonstrate the facts and the work and especially also to discuss the specific questions that arise in the inquirers and skeptics. There are undoubtedly scientifically well-trained persons who sense life only emotionally, and who have a blind spot with regard to the emotions themselves as co-determiners of health, happiness and efficiency of the human organism. After all, there are in nature and in the human being things of varying complexity. No doubt if we were on the level of the chiropractor's or osteopath's pathology and therapy, we might have difficulty in understanding the problems as we see and treat them. So would any one who thinks only in terms of infectious diseases. Anyone who thinks that Watson's accounts of behaviorism should cover all that arises in our field, will have another kind of difficulty. Those who imagine that all psychiatry and psychopathology and therapy have to resolve themselves into a smattering of claims and hypotheses of psychoanalysis and that they stand or fall with one's feelings about psychoanalysis, are equally misguided. I sometimes feel that Einstein, concerned with the relativity in astronomy, has to deal with very simple facts as compared to the complex and erratic and multicontingent performances of the human microcosmos, the health, happiness and efficiency of which we psychiatrists are concerned with. And yet there are enough facts which are so plain and easily intelligible that one can bring home the principle inherent in psychiatric work to anyone who wants to see.

Besides the complexity, there are many reasons that tend to favor a large blind spot with regard to the psychobiological facts. One of the great handicaps with which we work is that we deal with the most unruly and willful part or aspect of man, the very organ or function of self-assertion and self-concern and self-protection. Moreover, mankind would like to be free from scourges and their consequences without having to surrender the joys and habits that spread and engender them. It would like remedies for drug and alcohol addiction without having to give up the cravings and their gratification. The prevention of paresis and syphilis cannot be made foolproof, but will have to include human cooperation. The same holds for the control and training of emotion and fancy that clash with reality, and for the craving for self-realization at any price. A great deal of the cooperation in these most human

of human aspirations for more health, happiness and efficiency depends on a sensible acceptance of a *consensus*, which is apt to conflict with the doctrine of self-reliance. Even intellectually, the understanding and handling of these very human problems may not be everybody's job as little as is teaching or research in the sciences or many other things which we let those do who have the skill and time and experience and determination. We simply have to grant that a psychiatrist has to have a truly comprehensive knowledge of the human organism and also of its functioning in complex personal and social relations, past, present and future, and objective and subjective. The unwillingness to come and see what our work consists in and what we expect a student and a practitioner to master, is probably even more insidiously promoted by the deplorable training most of us get in the delusion that in the complexities of human life intuitional revelation stands above objective study and inquiry. That assumption of sufficiency of intuition may often work admirably in the ordinary pursuits of life and in the formation of hypotheses; but it certainly does not satisfy our demands in the pursuit of the serious and responsible problems of disease and human maladjustment. Fortunately, somehow, all these apparent obstacles are being met by concrete and positive lifts.

Man has at last begun to see himself as part of nature—without excluding what is often emphasized as supernatural—and he demands that the scientist include in his view of nature also what we know of man. We recognize that we are organisms that start under very definite conditions, and represent a curve of creative life, of growth to a more or less complete maturity with a wealth of opportunity for doing our share, and in time a passing away. We emerge from the stream of life as individuals and then sink back into the larger flow of contemporaries and those who follow us in our family, our race, our nation and whatever we are just a part or a more or less thoughtful representative of. It does not take much thought for us to realize the relativity, the dependencies, and the varying range of the sphere of action and influence of even the greatest of the individual entities in the larger flow of mankind.

In these rises of individual life and group life it is not merely the privilege but the duty of a science of man to recognize certain facts or features for which we may have no glaringly obvious equivalent

in the elemental sciences. In contrast to the practice of past ages, we do not start from mythological and philosophical absolutes, but single out concrete data of experience in whatever complexity we may find them. This does not necessitate any presumptions concerning final definitions and views of the ultimate nature of life and of consciousness and its contents, or of such topics and factors as religion, ideals and codes, ambitions or ethics, etc., or any final philosophies—nor does this imply any devastating emphasis on agnosticism. We know perfectly that as far as possible we do well to express the facts of any topic of concern in terms of concrete experiences and events and performances which at least would be most likely to contain all the real essentials of what plays a part. In dealing with human facts with our limited concepts and expressions and capacity to think at once comprehensively and concretely, we cannot afford to disregard suggestive pointers or indicators or references and perspectives within reach; we have to seek and respect the more comprehensive topics and groups of facts and tendencies which elementalism is apt to disregard and actually to shun, the data that some of us point to under the heading of integration and integrates, the data which are in the mind of the holist, to use General Smuts' term, that which Aristotle must have tried to imply in his entelechies, and what in practical life we call trends, possibilities, contingencies, etc.

As such suggestive rather than finished, contingent rather than finite topics and entities, I should mention what we call person and personality, character, experiences and tendencies, the intellectual and active and affective and thought processes and assets; primary and secondary symbolization, the crystallization of types, of life-attitudes, of prospective and retrospective emphases, of the range of vision of the moment, and the balance of assets. We might single out behavior-situations of tangible and suggestive and sufficiently comparable nature, definite life-situations and problems, the more lasting and temporary energy and action pressure of an organism or person, and the inherited and acquired endowment, the extent to which the person reaches the capacity for constructive composure as well as an ability to muster the assets in emergencies (*i. e.*, what we call judgment), the amount or extent of dependability (*i. e.*, the character), the extent of need of con-

sistency (personality), the extent and type of inclusion of others, singly and in groups, in the tendencies of action, in vision and thought and fancy, in play and work and in retrospect and prospect, and the amount of socialization as opposed to the mere self-concern and almost obsessive individualism so rampant to-day.

In view of the complexity of the facts, we have to cultivate ways of conveying what we want to convey in observable and workable situations and developments, and in terms and formulations that are as objective and comprehensible as possible, and open to trial and control.

We also have to give due consideration to the limitations of the human capacity for comprehension and real use of what actually can be conveyed in a statement.

Current practice in general medicine uses hard and fast diagnostic, prognostic, etiological and descriptive and explanatory "pathological" terms, and wants to force us to use for our far more multi-conditioned and complex field that which works to perfection in the simple patterns and problems but may not be so simply applicable in our own field.

Diagnosis and disease concept, in the form of a one-word diagnosis, does not work. To use it properly we should require either too general terms or too many too specific ones.

Our pathology does not get its most substantial facts from structure to-day, however much of our work does need the *control* of structure. Not even metabolism and the concepts current in parasitology and bacteriology, in neurology and toxicology, in physiology and endocrinology, are sufficient and profitable and applicable to a great extent. The concepts of neurology, structural and functional and experimental, rise only to a limited extent to the demands of what we meet in our experience. Yet all these must be utilized, and while we have to have the courage of our best possible formulations of the likely occurrences and emergencies with which we have to deal, these formulations must be kept in harmony with and checked up by what the more easily controlled sciences furnish us. This is what is attempted in most of our books. But what constitutes the fund of what is likely to present itself to individual consideration in practice and discussion is often a very different question. It will become more and more essential to replace the older traditional verbal concepts by orderly formulations of the

most telling samples of experience and observation and experiment by the best workers. It will not be easy to replace the current convenient way of disposing of cases with a would-be prognostic diagnosis and to find brief ways of rendering the essentials of cases as we *see* them. We must be able to do that first among ourselves and we have to cultivate the best and simplest and yet concrete and objective ways of pointing to the most dependable and workable facts, and to get them into forms in which statistical elaboration of the data will also become practicable.

With the public, with the student, with our neighbors among physicians, with the researcher and with the big leaders of medical organization, we have to bring into evidence and to reasonably simple formulation what we actually work with, so as to make possible a sensing of the concrete work and achievement and of the worthwhileness of effort and of the necessary sacrifices.

In the problem of adjusting individual and environment, and the individual to a whole lifetime, there are no doubt matters and vistas that do not come to the average man without work and without effort to gain concrete experience.

Yet it is one of our great tasks to offer such vistas so that we may *attract to our field healthy-minded and energetic and untiring workers* with indomitable determination to attain the mastery of the simple and also the complex facts.

For this, we should from the outset be able to give the younger generation and the future leaders of our cause an outlook and a close contact with facts and methods which dawned on us elders only after many devious wanderings.

Many of us are in psychiatry more or less by chance or accident. But it is not all chance. Whether chance shall gradually become more than accident, viz., a natural and purposeful development, depends on whether there is a vision of aims and purposes, an integration of the many elements and ingredients into a well-organized purposeful outlook and determination of a career.

Our Association with its subdivisions and branches and round tables represents pragmatically what psychiatry is to-day in the United States and Canada. It also gives us an idea of what it is fair to expect of us individually and as an organization representing a special branch of medicine or pathology and therapy. In our own ranks we determine in a way what each of us is likely

to be able to rise from and to rise to. In the fabric of life we form an aggregate, a kind of unit, of which each of us is but a part. The fate of progress depends on the existence of a minimal standard, a base line, which we create and maintain. I have no reason to deviate from the guiding principle I imposed upon myself when in Worcester and in New York State. Our hope of progress does depend on the brilliant individuals, but the success of these individuals and the continuity of their work will quite certainly also depend on a kind of atmosphere and a general base line of preparation with which we all have to work and with which we choose to work.

It is for this reason that I should like to draw a practical conclusion from my historical survey. Dr. White's policy of getting into the Association the various affiliated associations is a great step towards the creation of a common ground. Dr. May's effort to create local societies as recruiting stations for our national body is another perhaps even more telling step. I should like to recommend to our committee on resolutions an additional step.

This year, for the first time, several centers of psychiatric activity have received financial help for the more advanced and thorough training of workers in psychiatry in its broad sense. With it, I feel, there should go the working out, in these centers, of samples of curricula of training, samples of workmanship which ought to become matters of value and interest to the rank and file of workers in this country. Our British colleagues have for some time developed a method of encouragement and standardization of the workers in the form of courses of study and diplomas; and from the contact I have had with a number of those who were instructed in this way I am convinced that a type of familiarity with the facts and methods, and to some extent with the literature of our field, has been created that shows definitely also in the grasp on the practical tasks and in the preparedness for progress.

I should like to recommend that as part of the program of our Association, the various centers for intensive training be encouraged to work out orientation courses and intensive training courses of work, looking forward to two kinds of diplomas or equivalents of diplomas: a first diploma testifying to the possession, on the part of the keen worker of the rank and file, of an adequate basic training; and a second diploma testifying to advanced proficiency

based on a record of practice and special creative work of note. The worker is worthy of recognition.

Two desiderata are in my mind: a stimulus to the educational centers and to the men and women in our hospitals; and an impetus for the leaders to focus on the best possible curricula and to organize what will be helpful for the promotion of work. I see in the whole plan an inducement to get together in various localities groups of workers who will be willing to pool their assets and interests, who will want to make it their goal to know each other's working methods and to make theirs known to the others, a group that cultivates principles which should not be denominational and exclusive but which should put to the front those facts and formulations which can also become valid in other groups and in a more and more widely acceptable form: The development of a consensus compatible with the sciences and with the best methods of practical procedure, increasingly compatible with a general hygiene, and comprehensible even by the layman—this would be my goal.

I should like to get a resolution passed constituting a committee that would bring before us a plan for attaining in the various fields of neuropsychiatric work what our British colleagues aim at with their diplomas in mental medicine.

We want plastic and progressive standards rather than a set form; we want the right to individuality but with a recognition of a responsibility for a consensus.

The American Psychiatric Association with its branches and with its *AMERICAN JOURNAL OF PSYCHIATRY* has a huge field of opportunity. It has done much to establish common ground for many workers. May its meetings and its activities be a living demonstration of what actually can only be brought out in deed and not in mere word.



SCIENCE AND LEGAL PROCEDURE.*

By ROSCOE POUND, LL. D.

The Harvard Law School.

That the experts who are called upon to give opinions in the course of litigation, and especially in the course of prosecutions, are dissatisfied with the conditions under which they must assist in the administration of justice—are dissatisfied with lawyers and with the law—and that lawyers and courts are dissatisfied with the experts, are facts from which we must start. I shall not go over the well-trodden ground about the state of our law as to responsibility and mental disease, about the condition of our law of evidence and of our criminal procedure, nor about the merits and demerits, the possibilities and the limitations, of trial by jury in such cases, or the comparative advantages of inquisitorial and controversial methods. Surely by this time you will have heard of these things sufficiently. Nor shall I come before you with any remedy or remedies for what lawyer and layman must agree are serious defects in the administration of justice in these regards as things are in the social order of to-day. For I have little faith in simple and easy solutions of the problems of American justice, which may be enacted into statutes at the next session of the legislature and enable us then to go serenely about our several businesses in the assured confidence that one hole, at any rate, in our legal highway has been filled up and no future litigant wayfarer will fall therein. The causes of the phenomena which trouble us are too deep-seated, their roots run too far back in our social and political and institutional history, they have too intimate relation to our ingrained modes of thought and habits of action to admit of such offhand dispositions. Indeed, from the time, about a quarter of a century ago, when lawyers began to be conscious that our judicial organization and administration and our legal procedure were not responding to the conditions of to-day as they did to those of a century ago,

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bar association committees and legislative committees of associations of every sort have been busy drawing statutes and procuring their enactment without notably affecting the things which give concern.

Mark Twain says of the judgment of Solomon that the explanation lies in the way Solomon was raised. As he points out, a child more or less was nothing to Solomon. He might well contemplate a partition of a child in dispute which would not occur to the ordinary ruler or to the judge of to-day. Many things in law depend on the way those who framed the laws and those for whom they were framed were raised. When those for whom they were framed were raised in one way and those to whom in later generations they must be applied were raised in another, we are on the way to one of the crises which mark the course of legal history.

What we must do, if we are to understand the legal doctrines and methods and practices with which the psychiatrist comes in contact—and we need to understand them if we are to criticize them, and much more if we are to improve them—is to know well the conditions which gave rise to them or for which they were devised, the materials out of which they were shaped to meet the exigencies of those conditions, and the factors in so shaping them. Next we must understand the conditions in which they have to operate to-day, the factors in their failure to meet the demands of those conditions, and the materials at hand from which to fashion better doctrines and methods and practices.

First of all, in such a connection, we need to bear in mind that it is a perennial problem of the law how to maintain a due balance between the need of stability and the need of change. The general security calls for stability. The very nature of life—and the legal order is an adjustment of the relations of life and harmonizing of the desires of living beings—demands change. The general security calls for certainty, uniformity, generalized precepts, universal conceptions, to which particular cases may be referred. It demands definite rules, prescribing fixed limits within which the acts of magistrates and the pronouncements of judges shall be confined. But the individual life continually presents unique situations to which generalized precepts, universal conceptions, and definite rules may be applied only by the method of Procrustes. Thus throughout legal history we have had to steer as best we might between the

Scylla of rigid rules and fixed procedures and the Charybdis of judicial and magisterial discretion. Eras of strict law in which men regarded only the letter of unyielding rules have been succeeded by eras of an equity which varied with the length of the Chancellor's foot and a discretion which could be defined as the law of tyrants. Such eras in their turn have been succeeded by eras of a mechanical jurisprudence of conceptions which sought to force life into arbitrary historico-logical pigeon holes. To-day we are in reaction from the mechanism of justice which followed the more fluid justice of a creative period. But we are also in reaction against the mitigating devices which grew up at the same time in order to save the individuality of human life from the rigid workings of that mechanism.

In criminal law this difficulty, inherent in justice according to law, is specially acute because of the possibilities of abuse of prosecution and of penal legislation for political and for class ends. Jealousy of the law and of all its agencies through fear of such abuse is the explanation of many of the checks and balances and limitations and mitigating devices which so often make prosecution in the modern American city feeble, ineffective, and even futile. Yet it is not easy to bring about conscious change or deliberately to abrogate even the least of these. However much men may cry out for change of law in the abstract, when the conditions of a period of transition make the operations of the machinery of justice unsatisfactory, concrete changes involving power in the courts and in magistrates, curtailings of the guarantees of the individual life, and subjection of the citizen to a certain margin of official discretion, encounter instinctive opposition. Yet this is the direction in which improvement of our administration of justice is going and must go. To take but one example, one of the measures of improvement of criminal justice in our states on which all who have studied the subject agree is restoration of the common-law power of trial judges to charge upon the facts. It is manifest that this power, vigorously exercised, is one of the chief factors in the effectiveness of British criminal prosecutions. Nevertheless, at the very time that bar associations and jurists and crime commissions are calling for restoration of this power, the Senate of the United States has been threatening to take it away from the judges of the federal courts.

When new modes of medical or surgical or psychiatric treatment are discovered, or are believed to have been discovered, it is within

the power of any physician or surgeon or psychiatrist to try them out as and when his conscience and his scientific faith allow. He may even hazard certain experiments within judicious limits. But the general security forbids that trial judges experiment at the expense of life, liberty, or property, and experimentation by appellate tribunals is confined to choice of starting points for legal reasoning from among prescribed legal materials and development of those materials by an authoritative technique. Likewise legislative experimentation is held down by constitutional checks. Law-making involves universal rules, applying not to some one case, but to all cases of its kind. Judicial decision, when new situations are presented to tribunals, has a certain lawmaking quality in that we require the court, in the interests of certainty, uniformity and equality, to do in the next like case what it did in the one before, at least until competent lawmaking authority sets up a new rule. Thus any considerable judicial or legislative experimentings would extend in their effects beyond the reasonable applications of a method of trial and error and would obviously be intolerable. As Aristotle put it, our legal situation is much as it would be if the individual patient, instead of choosing his own physician, were to be referred compulsorily to an official physician, and, since the latter might conceivably be the patient's enemy, or might be rash or wilful or indifferent, it were required that he should prescribe from a book, designated by the state, and according to rules laid down in that book and put his diagnosis and his reasons in writing on a permanent record. The practice of medicine might be less satisfactory in its results if such a course were necessary.

Nor may we ignore the importance of public belief that the legal machinery is achieving justice. That the people at large believe justice is done is hardly, if at all, less important than that justice be done fully and exactly. We may not expect to have a system of criminal justice far in advance of what the public can and will understand and believe in. We must make the demands of science clear and familiar to the public before we may, in deference to science, tear down much to which men are accustomed or build up much that is new. When science is itself in a state of flux, when new discoveries, new theories, new methods are set before us day by day, it is increasingly difficult to make an adjustment of legal conceptions and legal institutions and legal practices to scientific knowl-

edge for the time being which will at once be intrinsically sound and commend itself to public understanding.

We have an illustration of this in many phases of penal treatment. Most people were brought up with certain ideas about jails and prisons which had come down from a pioneer or rural society. Likewise most people were brought up with certain ideas about criminals which speak from the society of the past. Within a generation great things have been done in the scientific study of penal treatment. In the era of progressivism at the opening of the present century, much of this scientific study bore fruit in real improvements of penal methods and penal institutions which have every promise of better things. But the public had yet to be taught what such things mean. It had to perceive much behind them which was not apparent offhand to unaided common sense. It had to adjust to these institutions preconceived ideas which often were quite at variance with them. The result has been a reaction in the last decade which threatens to do not a little injury to some of these new devices and to retard greatly the development of others.

Not the least of the many dangers of offhand remedies and paper schemes for bettering the conditions of judicial investigation about which scientific men justly complain, is that these remedies and schemes will go beyond not merely what courts and lawyers, but what litigants and lay onlookers can understand and appreciate, and thus will lead to a reaction which will make our last estate worse than our first. We have an impressive example of this in the reform of legal procedure which took place in the middle of the last century. It was sorely needed. In the end what the reformers had in mind to do has come about. But they sought to bring about far-reaching changes before bench and bar understood either the ends in view or the means chosen to attain them. Hence, for a generation many of the reforms not only failed of the effect intended but actually had effects which in action were much more inimical to justice than the formal, over-refined procedure which was displaced.

I grant that lawyers, as a profession, are apt to be over-timid for the general security. Nearly every prophecy the profession has ever made as to the dire results of law reform in general or of particular reforms has been belied by the event. But this should not blind us to a real fact, borne out by all legal history, with which all

reform of law, and in particular all reform of criminal law, has had to reckon.

First, then, let us look at the history which lies behind the doctrines and practices and procedure in cases involving mental disease. And let us confine ourselves to the criminal law, since the crux of the difficulties is there and there also the historical factors are easiest to lay hold of.

What are the circumstances behind our doctrines as to responsibility and mental disease? What was the historical environment in which they grew up and took shape? To answer these questions we must look into the origins of our criminal law which furnished the materials for our orthodox common-law conception of a crime and then at certain conditions of pioneer, rural, agricultural America—especially of frontier America—to which that conception had to be applied at the time when our institutions were formative.

Historically, one of the origins of criminal law is in summary community self-help; in offhand public vengeance by a more or less orderly mob. In the old Germanic law, when a crime had been committed, the neighbors turned out armed, blowing horns to summon their fellows, and gave chase. When the offender was caught, he was hanged or beheaded, or thrown off a cliff, or otherwise summarily dispatched, as seemed most convenient. Regulation of this public vengeance, giving rise to a sort of orderly lynch law, is one of the earliest forms of criminal law. In our system, the king required the neighbors to bring the offender before the magistrate instead of executing him, and he was tried by the king's justices and a jury and executed under the king's warrant. Thus down to the nineteenth century all serious crimes cognizable by the king's courts in a common-law prosecution were punishable by death. When in the last century we came to put our criminal law in the order of reason, this crude revenge theory of crime was replaced by a philosophical theory of retribution and the vicious will. In the nineteenth century the tendency was to resolve all legal problems in terms of the will. It was an era of abstract individualism in economic, political, and legal thought. The greatest good was taken to be the maximum of free individual self-assertion. Liability was based on exertion of the will. One voluntarily undertook something and the law held him to what he undertook, or he voluntarily acted in a culpable way and the law held him to restore

the rightful order which he had disturbed. Hence crime was looked upon as a wilful departure from the standards of right and wrong promulgated by the law. The criminal was one who, having the power to do right or to do wrong and able to discriminate between them, chose to do wrong. By so choosing he subjected himself to the pre-appointed penalty for such wrongdoing. The whole will jurisprudence of the last century has been breaking down. Within a generation there has been a steady growth of statutory crimes in which the vicious will is not an element. More and more our criminal law has been swinging to a theory of responsibility for conduct endangering the general security. Under the conditions of to-day the "cheerful idiot" is more common and often more dangerous than the intentionally vicious who goes about inflicting premeditated harm. Likewise in our law of civil injuries we are having to give over the idea of liability as always and exclusively a corollary of fault. But the will idea gave shape to our criminal law, and the resulting conception of a crime as made up of act and intent is still orthodox.

This conception of a crime dictated the legal theory of the relation of responsibility and mental disease. If a crime was made up of act and intent, disease might affect the act element or it might affect the intent element. In the case which shaped the law on this subject, it chanced that the intent element came under consideration. Was there the vicious will which the law postulated? Could the accused distinguish right and wrong? Did he labor under a delusion? If the latter, treat the delusion as we should treat an honest mistake of fact. Accepting it as true, was his conduct the product of a vicious will? English courts stopped here because England came long before us to an urban industrial social order which compelled recognition (even if not avowed) of the social interest in the general security rather than the vicious will as the central conception. Hence English courts did not seek to be logical in this connection. But many American courts carried the idea out logically. They asked, as well they might when they accepted the orthodox analysis, did the mental disease affect the act element? Thus they added to the English doctrine a further doctrine as to irresistible impulse.

How artificial all this is and how misleading, in that it sets up an artificial legal conception of insanity which is quite at variance

with the facts of mental disorders as known to science, you know but too well. But the story does not end here. For the artificial legal conception, made to fit a theory of crime whereby the eighteenth-century rationalism had sought to replace the systematized social vengeance of the Middle Ages, had now to be applied in Great Britain to a new industrial order and in America to a pioneer, rural, agricultural order and then, when doctrines and institutions had taken shape for the needs of that order, to an urban industrial order for which they were ill adapted.

As I have said, the English courts did not try to be logical. Having laid down the doctrine in terms of the will theory with reference to the intent element, they stopped there and have sought to make their doctrine fit roughly into the needs of the general security by the charge of the court in which it is given a practical application to the facts of the particular case. The result is then tempered by the intervention of the home office.

With us the doctrine encountered a different practical situation. In the last century most of the killings which attracted public attention grew out of injuries to family honor. In all primitive social conditions this interest in the family honor holds first place in the social scale of values. In a pioneer community there is a deep-seated feeling that the he-man, regardless of his honor, should and must resent insults to the females of his household and interferences with his domestic relations even to the point of killing. The inherited criminal law made no provision for this sentiment. It was made to fit the demands of public opinion by the power of juries to render general verdicts and a straining of the doctrines as to insanity. Alienists were at hand with theories from which advocates could argue, and on which judges could discourse in abstract instructions. Thus the doctrines of the law as to insanity were warped in their application so as to fit the demands of public opinion in the society of the last century. As Mark Twain put it, the lawmakers were quite in error in making murder a crime. They should have made insanity a crime. But to-day, after our doctrines and practices had taken shape to meet the demands of public opinion of the past, it becomes necessary to apply them to new social conditions in which the frontier ideas of honor are largely obsolete, in which new types of killing attract public attention, in which men demand the conviction of killers as emphatically as they demanded acquittal of

avengers of family honor a century ago. Characteristically we resort to patch-work remedies to meet this situation. Some jurisdictions illogically treat insanity as an affirmative defense, as, in fact, it was in substance when used as a sort of fiction to get cases of killing growing out of family wrongs before a jury. It is significant that at least one state which hews to the English doctrine in murder cases, applies the logical doctrine to cases of kleptomania. Other jurisdictions went further and one by statute actually requires the affirmative defense of insanity to be established beyond a reasonable doubt. From a logical standpoint, from a psychological standpoint, from a practical standpoint, the law on this subject is a muddle because first it developed out of a conception of crime which arose to meet needs of the change from a medieval to a rationalist criminal polity—a conception which we must give up and are giving up; because, second, that doctrine was then strained to meet a need of backhandedly introducing an exception into the law in case of killings as a point of honor in family wrongs; and because, third, it must now be strained again in order to get away from the older practices when public opinion demands the punishment of all killers.

Our procedural methods as to experts were seriously affected by the resort to insanity as a sort of legal fiction to introduce an extra-legal amendment to the law of homicide. The practice which we inherited may be seen in the seventeenth-century trials for witchcraft before Sir Matthew Hale. In these trials the famous Sir Thomas Browne gave expert testimony as to witchcraft. He told of cases of which he had read in the books, narrated the traditional learning on the subject, and pronounced his opinion upon the evidence adduced in court. Upon the simpler medico-legal issues of a century ago such a practice could serve very well. But when theories of insanity had to be devised and testified to for the purpose, not of assisting the tribunal to get at realities, but of enabling it to square an artificial doctrine and a rule of law calling for conviction with popular desire to avoid conviction in the particular case without altering the text of the law, artificialities had to be grafted upon that practice and not unnaturally the ingenuity of advocates refined upon those artificialities. Moreover, as legal rules are from their nature of general application, these artificialities spread to, and, as it were, infected the whole matter of expert

evidence in litigation. Then came the great development of medical science in every direction in the last generation, which made the questions of expert opinion and scientific fact with which tribunals must deal infinitely more complex and more difficult. It would not have been easy to adapt our practice to these complexities and these difficulties if we had encountered them with the simpler methods of the seventeenth-century courts. Encountered with those methods refined for a special purpose now obsolete, the result is the condition of which expert, lawyer, and public complain. For not the least of the abuses of the present practice is the extent to which the expert is an advocate rather than a witness. To some degree this is an outcome of our controversial mode of getting at the facts. Hence to some extent it exists in England to-day; as one may see, for example, by reading Armstrong's trial in the Notable British Trials Series. But it has gone to great lengths in America largely because in the homicide cases in which insanity was used as a means of plowing round unpopular demands of the letter of the law, experts were in substance and were expected to be advocates. It was their job to work out and expound ingenious theories to make out an insanity for legal purposes and for that one trial where every one understood that for other purposes and for other occasions the man was undeniably sane.

Four factors operating under the foregoing circumstances fixed our forensic habits in the shape with which you are familiar. First among these factors we must put the primacy of the trial lawyer in pioneer America, the rise of the professional defender and his correlative, the professional plaintiff's lawyer, and the recent hegira of the leaders of the profession from the courts. In rural, agricultural America it was one of the functions of the courts to furnish public entertainment. The farmer, remote from theatres and urban spectacles, found his diversion in politics and litigation. Court week found the square about the county court house lined with farmers' wagons and the adult male population of the neighborhood in the court room enjoying the tilts between counsel and following the fine points of the game of justice and the harangues of the advocates as an urban crowd of to-day follows the fine points of the baseball game. Moreover, the pioneer community was very likely to be a Cave of Adullam. Every one that was in debt and every one that was in distress and every one that was discontented gathered them-

selves there, and having the making of local legal and political institutions in their own hands, had no intention of opening any doors whereby their creditors might pursue them into the wilderness. Their strongest hold was a technical procedure affording all manner of opportunities for delay and turning cases off from the merits, and this fitted well with the popular demand for a forensic game of wits to afford to the frontier community what professional athletic contests do for urban communities of the present.

On this bad beginning we built further in the era of railroad lawyers, when the leadership passed to the professional representative of the public utility. He had to combat jury prejudices, and he, too, found his best hold in an over-development of procedure. For a season there was a struggle between the professional defender, relying on minute details of a technical practice to steer the case away from the jury, and his correlative, the professional plaintiff's lawyer, relying on the prejudice and on what may fairly be called the lawlessness of juries. This struggle led to legislation and minute judicial decision on every detail of procedure as a result of which it became a settled American dogma that the trial judge was to be no more than an umpire in the game between counsel. Expert evidence had to be fitted into this game, and as with every other feature of the game, was fitted in by a system of artificial rules logically developed for their own sake and for the sake of the game. Now that every farmer is within reach of urban diversions through the automobile and the movie and the radio, now that the demand of the time is for tribunals which dispatch judicial business efficiently rather than for tribunals which combine justice with public spectacles, we must re-shape our forensic practices to the exigencies of a busy age in which the factory is the model and business engineering sets the fashions for all institutions. But just as this change was pressing upon our courts, the same economic development led to a passing of the leadership in the profession from the public utility lawyer to the client caretaker. To-day the leaders of the bar sedulously keep out of court. Their work is in business organization and reorganization, in the direction of business enterprises, and in guiding men of business away from legal difficulties. Their interests are not in what goes on in court; they have little influence on what takes place in the forum. At the very time when the best thought and leadership in the profession

is needed for the overhauling of our forensic practices, it is turned decisively to other channels and such things are left to professional plaintiff's lawyers and professional defendant's lawyers bred in a conception of contentious trials and taking our historical nineteenth-century procedure for the legal order of nature.

I have spoken of the obsolescence of the trial as a spectacle for the diversion of a rural or frontier neighborhood. But this function of the forum is not wholly obsolete. The rise of a type of journalism which exploits all events as spectacles and seeks to convey news in terms of emotion and put all the affairs of life into shrieking headlines and all occurrences in the form of sensations, has given new life to the conception of a criminal trial, or at least a trial for homicide, as a species of theatrical. Indeed criminal law has always suffered from its picturesque possibilities.

Another factor in the continuance of a bad situation is neglect of the criminal law by our law schools. Criminal law is substantially the only important branch of American law which has not been affected powerfully and affected for the better by some textbook written by a great teacher of law and embodying the results of his teaching and of his study in preparation for teaching. When we turn to the Directory of Law Teachers, we may read the same tale. There are no teachers giving their lives to the criminal law as legal scholars have given their lives to nearly every important topic on the civil side of the law. Those who have done most for the subject have put exacting subjects of civil law alongside it as major interests, and the leader among them long ago turned definitely to another field. Indeed, in this neglect of the criminal law our law schools but reflect the demands of students and the attitude of the profession. Students press for the subjects with which they expect to be concerned in their professional life. No ambitious young student in a national law school of to-day seeks to prepare himself to practise in criminal causes. He knows well that habitual appearance in such cases is the business of a type of politician-lawyer of little standing at the bar, or of the lowest stratum of the profession. Hence he seeks no more than that minimum of knowledge of the criminal law which is required by every lawyer. Thus the economic causes which have turned the leaders of the profession more and more away from the courts, and almost completely away from the criminal courts, have had the effect of turning legal scholarship

away from criminal law and criminal procedure. But under the conditions of legislation and judicial decision which obtain to-day, legal scholarship in our national law schools (*i. e.*, those which teach law for the country as a whole rather than as local law) must be our chief reliance in the quest for better things.

Fourthly, we must take account of the close relation of criminal law and the administration of criminal justice with politics. This is one of the inherent difficulties in criminal justice throughout the world and in all time. It is aggravated in this country in that in our era of Jeffersonian democracy we put the whole machinery of enforcing and applying the law into politics. This played into the hands of the contestants in the struggle between professional defenders and professional plaintiff's lawyers which went on in the last generation. It led judges to give free rein to advocacy and to abdicate such leadership in trials as legislation had left them. What was worse, it tended to aggravate the spectacular features of prosecutions. At least the district attorney is a candidate for reelection. During the progressive era of the beginnings of the present century, successful prosecution in cases which attracted public notice was the highroad to political preferment. Men went from district attorneyships to the highest offices in the land. But it was not efficiency in the everyday work of prosecution which offered these opportunities. It was the doing of things in such wise as to meet the exigencies of the headline writer and fill the columns of the morning paper. Nor were these opportunities confined to prosecuting counsel. More than one elective judge found presiding over a sensational prosecution a steppingstone to Congress. The judicial Barnum came to be a well-known figure on the bench in our cities and a demand for rotation in the calendars so as to give each judge his turn at the cases which would bring him before the public interfered with the specialization and acquisition of judicial experience which are necessary to adequate administration of justice in the urban centers of to-day.

Such are the elements in our forensic practices as they have come to be and are. When those practices function in the social and economic order of to-day they encounter complex scientific questions in place of the simple ones of the past; they encounter questions which transcend the powers of jury common sense in place of questions in which an expert could interpret science to

that common sense. Also they raise questions as to which science must often pause and expound alternatives and propound theories and suggest qualifications. When the progress of science is so rapid as to make it difficult even for specialists to keep abreast of the times, a system devised for an era of stable science and authoritative scientific dogmas of universal acceptance becomes lost.

To these things we must add (1) the piling of new burdens on our criminal law at the very time when it was struggling to meet the needs of an era of transition; (2) the breakdown of the orthodox analysis of crime into act and intent, taking away the foundations of our substantive law at a time when rapid and thorough overhauling was required and giving us no assured new basis in return; and (3) the demand for individualization which has become strong in every direction but is especially insistent in connection with criminal justice. Each of these demands a moment's notice.

When absolute theories of morals have ceased to govern the people as a whole and the supernatural sanctions which were effective instruments of social control a century ago have much less hold upon the mass of mankind, law is strained to do double duty. For example, in such an era of secularization, law is looked to for much which was formerly conceived as in the domain of the church and the home. Truancy and incorrigibility come to be matters for courts instead of being referred entirely to domestic discipline. Nor do the demands upon law stop at this point. One has only to compare the statute books at intervals of fifty years from the setting up of our states to the present to see that within a generation the area of the criminal law has expanded by leaps and the process is far from at an end. Thus enforcement of law becomes a problem of the first magnitude whereas it was unknown, as a problem, to the legal science of a generation ago. Instead of a simple task of adapting the details of a received law to a new society, such as we had when we made over English law for America after the Revolution, we have a series of tasks going to the very root of the legal ordering of society and interwoven with economic, social, political, and psychological questions of every sort and at every turn.

Chief among these new problems, and very likely of most interest to such a gathering as this is the demand in every direction for individualization of the application of legal precepts, and

hence demand for individualized application of criminal law and in particular of penal treatment. We must develop preventive justice, as in your profession you have been developing preventive medicine. We must adapt our legal remedial action to the man and the case rather than to the act, as your profession has been adapting treatment to the man and the case rather than to an abstract conception of a disease. Thus far in law the movement for individualization has taken the form of setting up administrative agencies and administrative tribunals in which typically every cause is treated as unique. We have to develop judicial individualization, as they are learning to do in the English Court of Criminal Appeal and somewhat as formerly we learned to do in courts of equity. All this will require restudy of much of our established technique, reshaping of many of our legal institutions, overhauling of our ways of doing things in the forum. It cannot be expected that we shall find how to do all this at once; much less that after we find how to do them we shall be able to make the changes over night.

But, you will say, we ought to be about the work of re-adjustment and adaptation, and my answer is that the work is already beginning in the ways and in the places where, as I conceive, it will prove to be most effective. I need not say to scientific men that before it there must go a great deal of truly scientific research. Just now research is a fashionable word in the science of law, and like all fashionable terms it is coming to be much abused. Not that there is not some gain in the very currency of the word among lawyers. For the jurisprudence of our classical era saw no place for research. Jurists of that time conceived that by a sheer effort of reason one could discover the terms of the social compact behind any given situation. A process of abstract reasoning on the basis of the ideal of an abstract perfect man was taken to suffice for every problem. Later the rise of historical jurisprudence accustomed us to historical research. Still later the rise and unification of the social sciences taught us something more of what we had to do. To-day the leaders among jurists and law teachers are well agreed on what is to be done. The pioneer work of Eugen Ehrlich on the living law, the paper of Kantorowicz on "Jurisprudence and Sociology," no longer are voices of those cry-

ing in the wilderness. The vogue of the term research is a symptom of deeper stirrings beneath the surface.

I concede that the research of which I am speaking, the research which is needed to make our legal order effective for its purpose in twentieth-century America is something quite different from much which just now gets the fashionable label of research. It is even something far beyond the work of the law teacher who takes a year off for study of some phase of his subject or to write a book. It is something far beyond what may be done by the law teacher who is given a year's appointment as research professor to relieve the monotony of his ordinary tasks. I am not disparaging these things. They have their value. But there is work to be done which must be done by those who give their lives to research in law. We must organize legal research with no less care and no less thoroughly than we have organized our best legal education. The days when Story could be a justice of the Supreme Court of the United States, Dane Professor of Law at Harvard, and our most prolific and effective legal text writer—at once judge, teacher and writer of books of decisive influence in the making of American law—those days are gone as the snows of yesteryear. In Story's day one man could work upon many subjects. To-day many men must work upon one subject.

What once, when our legal institutions were formative, was possible by individual effort of legal scholars immured in law libraries and bringing the historically given materials in the books to bear upon their personal experience and their individual knowledge of the simple problems of a rural, agricultural society of self-sufficient, economically independent neighborhoods, must be done to-day for an economically unified, urban, industrial society, by the co-operative effort of many scholars working together. It must be done by these scholars working with assistance from without the walls of universities, on matters out of the personal knowledge of the group and often out of the personal knowledge or experience of any of them. By this cooperative effort they must define the existing problems and foresee the coming problems of administration of justice in America. They must bring to bear upon those problems all the resources of scientifically organized experience of judicial decision in the English-speaking world. But they must do much more. They must bring to bear upon those problems all the

thought of jurists throughout the world, scientifically organized with respect to American needs, and all the resources of the social sciences, and in the case of criminal law, the resources of the medical faculties as well, with results scientifically organized, interpreted, and made applicable for legislative and judicial purposes. They must do those things with an eye single to the making of our legal machinery the best of which we are capable and of making its operations the best of which such machinery is capable.

One man research in law will no longer suffice. Partisan, made-to-order research will but aggravate our bad legislative situation. Research must be done upon subjects as a whole, from a nation-wide or even world-wide, no less than from a local standpoint. Also it cannot be done fruitfully if done in a hurry. As I have said, it must be done cooperatively by scholars of many types and in many subjects, uniting their learning, their organized experience, and their trained energies in a joint effort. It must be carried on for its own sake in a purely scientific spirit. It must not be done upon single controversies as they arise, but upon the whole field in and out of which controversies arise. It must involve long, patient and self-sacrificing labor on the part of scholars who are not hurried by a demand that they "show results" day after tomorrow, or fill out the measure of an annual report at regular intervals. They must be in a position to devote to each problem all the time and labor and thought which scientific method may require.

For a long time in Continental Europe work of this sort has been committed to ministries of justice, and such ministries, if we could have them, might achieve much. Indeed they have been urged repeatedly. A century ago Bentham called for a ministry of justice in England. Later his plan was urged by Lord Westbury and in 1918, in a memorable report on the machinery of the British government, Lord Haldane stated the case for such an institution most convincingly. In this country it has been advocated for New York by a commission of which Judge Cardozo was a member, and that great authority has argued for it in an article in one of our legal periodicals. But such ministries are at best a long way off. They are to some degree out of line with the genius of English-speaking peoples. We rely upon spontaneous individual effort, and our instinct is to confide no more than the

necessary minimum to official agencies. Moreover, the public would be likely to assume that the work of such ministries would be vitiated by politics, and as things are in American officialdom this might well be the case. Without the confidence of the public they could achieve little.

As an alternative, I have been urging organized, systematic legal research in our universities, where the conditions of effective quest for truth and the guarantees of public confidence seem assured. Privately endowed extra-academic foundations may do something and are already doing something. But I doubt their ability to inspire full public confidence. I doubt their ability to bring together the groups needed for cooperative research. I fear the pressure from their trustees to show speedy results to be incorporated in an annual report. In the law school of any state university there is already the foundation of a public ministry of justice for that state, and every university law school may be made the nucleus of an effective American substitute.

To make the argument concrete, let me tell you something of what is actually going forward. In the law school with which I am connected, the means are at hand and we are organizing a number of institutes of research. The one in which you would be interested is the Institute of Criminal Law. As director there is to be a research professor giving his whole time to the Institute. He will have no teaching obligations but may, if he chooses, conduct one graduate seminar as a means of trying out his ideas. With him are to be associated the two teachers of criminal law in the regular curriculum, each relieved for this purpose of one-third of his teaching work. With them will be associated also two experts, giving their whole time to the Institute, one as professor of penal legislation and administration, the other as professor of criminology. To this staff we shall add a group of research fellows, some of them candidates for a degree, some of them invited specially to do work of research in criminal law for its own sake. Above all we shall seek to enlist in this Institute the interest and cooperation of members of other faculties of the university working in related fields. We shall seek to make connections with the medical faculty—with psychiatrists and neurologists. We shall seek to make connections with the faculty of arts and sciences—with psychologists, and economists, and sociologists, and experts

on government, and experts in social work. I hope to see such work organized presently and going on in all the great law schools of the land. There is more than enough to do for all of us for a generation to come. On the results of research of this sort, American legal and political inventive ingenuity will do for the present century, on the basis of our nineteenth-century law, what it did in the formative era on the basis of the English law and English institutions of the seventeenth century.



THE SPECIFIC GRAVITY OF THE BLOOD SERUM AND INTRADERMAL SALINE TESTS AS INDICES OF THE WATER METABOLISM.*

BY K. E. APPEL AND C. B. FARR.

The possibility that variations in the water metabolism of the blood and tissues are an important factor in mental diseases of one type or another, or at one stage or another, has frequently been entertained. Thus patients on admission are frequently described as "desiccated"; occasional elevated leucocyte counts are loosely referred to concentration of the blood; again writers (*vid. infra*) speak of an emotional anhydremia. For these and other reasons we decided to utilize the intradermal wheal test, with which one of us had had considerable experience,¹ and (on the advice of Dr. J. H. Austin) the specific gravity of the blood serum, as criteria of water metabolism in tissues and blood. Determination of the plasma proteins by the refractometer or of the total N. of the serum by the Kjeldahl method would have served the same purpose as the specific gravity test. Coincident hemoglobin tests and leucocyte counts were also made for comparison.

Kafka² in 1926 remarked that changes in the specific gravity of the blood in the psychoses were unknown to him. As far as we can find no one has busied himself with this matter since that time. We made use of the serum, rather than the whole blood or plasma, as more accurately measurable and unmodified by anticoagulants (Naegeli). We used Nicol (or pipette-like) pyknometers of approximately 2 c. cm. capacity and weighed both serum and water at room temperature (24° C.). Gettler and Baker, who made a series of determinations in 30 normal people, used the same temperature (25° C.)³ but only 1 c. cm. of serum. In a few cases, where larger amounts of serum were unavailable, we also used the smaller quantity. Weighings were made to 0.1 mg. Blood and serum

* Read before Philadelphia Psychiatric Society, March 9, 1928. From the Clinical Laboratory, Dept. for Mental and Nervous Diseases, Pennsylvania Hospital, Philadelphia.

† Misquoted by Gram.⁴

(obtained by centrifugation) were protected from evaporation, previous to weighing, by rubber tube caps. We took our blood in the morning after an over-night fast and do not regard this as an unimportant detail, though Gettler and Baker took theirs three hours after breakfast and found values "always within the normal range" ("1.0241 to 1.0380"). Further details of technic are unnecessary. In addition to these "normal" values (detailed below) we have encountered the following: Dr. J. H. Austin⁸ told us that his normals fell between 1.0260 and 1.0300; Naegeli⁹ quotes the figures 1.029 to 1.032. The latter makes a nice distinction between hydremia or diluted blood and polyplasmic blood (in which the normal constituents, aside from the corpuscular elements, are unchanged). Stebbins and Leake,⁷ examining whole blood by the method of Barbour, found diurnal variations in healthy men of 0.0033 mg.; in normal women of 0.0027. This variation probably applies (in a measure) to serum, and while it does not affect our own cases, which were all examined in the early morning, may help to explain discrepancies in the findings of others to which we shall refer below. Finally, Barbour and Hamilton⁸ describe a rapid and "accurate" method of determining specific gravity which is applicable to blood serum. Their method is a modification of the old Hammerschlag method. They refer to emotional hydremia in dogs, in whom "excitement always increases the blood concentration, sometimes by as much as 10 per cent," and hence wonder "how many really normal blood samples have ever been taken." While this point requires more study than we have been able to give it, our observations thus far tend to be reassuring in this respect. Otherwise, clinicians and laboratory workers might well feel discouraged. Barbour and Hamilton also refer to "hydremic changes associated with insulin hypoglycemia." This would suggest correlations with our next paper,⁹ a clue which we have not yet had opportunity to follow up.

One of us (Dr. Appel) personally made some 62 intradermal saline tests,[†] most of which were coincident with the specific gravity estimations and blood counts. These tests appeared to show a shortened disappearance time of the wheals (in certain of our toxic and overactive cases), which is generally held to indicate a

[†] Using the original technic of McClure and Aldrich—intracutaneous injection of 0.2 C. C. of an 0.8 per cent aqueous solution of sodium chloride.

direct disturbance of the water metabolism or toxic factors influencing the latter. However, the "distribution" of the findings was abnormal and there was no consistent correlation (evident) with our other observations. Moreover, the disappearance time itself was difficult to determine objectively. This is a serious objection to the method. We spent some time devising instruments for the latter purpose, with indifferent success. For these reasons we are discounting our results for the present, or until we have time to interpret them more carefully.

In conclusion, we would like to emphasize the remarkable constancy of the specific gravity under any but extreme conditions. As stated in a recent editorial,¹⁰ "The blood tends to maintain its integrity of composition" (*i. e.*, concentration) "with great tenacity." It is clear that definite abnormalities in the water metabolism of the tissues may be present without any appreciable rise in the specific gravity of the blood. There need, therefore, be no correlation between the blood concentration and the state of the tissues as revealed by the intradermal test. We regret, therefore, to be able to report only inconclusive results as regards the latter. Our specific gravity figures, however, are of value, covering as they probably do the usual variations within the normal; in addition they are the only figures—as far as we can find—applicable to the psychoses.

SPECIFIC GRAVITY OF THE BLOOD SERUM AT 24° C.
69 PATIENTS.

Quartiles	Range	Averages
1st Quartile	1.0247-1.0267	1.0259
2d Quartile	1.0267-1.0280	1.0275
Median .....	.....	1.0280
3d Quartile	1.0280-1.0288	1.0287
4th Quartile	1.0288-1.0323	1.0300
Average of 69 cases.....	.....	1.0279

SPECIFIC GRAVITY OF THE BLOOD SERUM—MODAL DISTRIBUTION.

Number of cases	Range	Per cent
3	1.0240-1.0249	
4	1.0250-1.0259	10
13	1.0260-1.0269	
13	1.0270-1.0279	
21	1.0280-1.0289	
8	1.0290-1.0299	80
3	1.0300-1.0309	
3	1.0310-1.0319	
1	1.0320+	10

SPECIFIC GRAVITY OF THE BLOOD SERUM—NORMALS.

	Range	Averages
Penna. Hospital, 10 cases at 24° C....	1.0260-1.0292	1.0271
Gettler and Baker,* 30 cases at 25° C..	1.0241-1.0380	1.0293
Dr. Austin (personal communic.)....	1.0260-1.0300	

* Three hours after hospital breakfast.

SPECIFIC GRAVITY OF BLOOD SERUM (69 CASES) AND INTRADERMAL SALT SOLUTION TESTS (62 CASES).

A. CLASSIFIED ACCORDING TO BEHAVIOR.

Behavior	Spec. Grav.	No. cases	Disappearance T.	No. cases
Normal	1.0282	18	46	19
Underactive, retarded and depressed	1.0279	11	34 *	8
Overactive	1.0275	40	35 *	35

B. CLINICAL CLASSIFICATION.

Reaction				
Organic-toxic	1.0284	22	35 *	21
Schizophrenic	1.0273	14	48	10
Affective	1.0279	19	34 *	17
Unclassified	1.0282	14	42	15

* Lessened disappearance time.

SPECIFIC GRAVITY OF THE BLOOD SERUM—STANDARD DEVIATIONS.

	Arithmetic average	Standard deviations
Normals—Gettler & Baker.....	1.0293	0.0030
Normals—Penn. Hospital	1.0271	0.0010
Patients—Penna. Hospital Totals.	1.0279	0.0016

PATIENTS

A. CLASSIFIED ACCORDING TO BEHAVIOR.

Behavior		
Normal	1.0282	0.0011
Underactive, retarded and depressed	1.0279	0.0018
Overactive	1.0275	0.0017

B. CLINICAL CLASSIFICATION

Reaction		
Organic-toxic	1.0284	0.0015
Schizophrenic	1.0273	0.0015
Affective	1.0279	0.0018
Unclassified	1.0282	0.0013

INTRADERMAL SALT SOLUTION TEST—STANDARD DEVIATIONS.

	No. cases	D.T.	S.D.
Patients—Penna. Hospital Totals..	62	38	17

A. CLASSIFIED ACCORDING TO BEHAVIOR.

Behavior			
Normal	17	50	12
Underactive, retarded and depressed	9	34	15
Overactive	35	36	17

B. CLINICAL CLASSIFICATION

Reaction			
Organic-toxic	21	35	18
Schizophrenic	10	48	13
Affective	17	34	5
Unclassified	15	42	18

a. Two normal behavior cases excluded because of organic disease: disappearances time 10 and 14 minutes respectively. b. In this table disappearance time and deviation have been given in round numbers.

SPECIFIC GRAVITY OF THE BLOOD SERUM—SIGNIFICANT DIFFERENCES.

- a. Comparison of *Normals*, Penna. Hosp. and *Patients*, Penna. Hospital:
Significant difference, 10.
Actual difference between arithmetic averages, 8—not significant.
- b. Comparison of *Normals*, Penna. Hosp. and *Organic-Toxic Cases*, Penna. Hosp.:
Significant Difference, 11.
Actual difference, 13—*prob. significant*.
- c. Comparison of *Normals*, Penna. Hosp. and *Normals*, Gettler & Baker:
Significant difference, 19.7.
Actual difference, 22—*prob. significant*.*

* Probably accounted for by preliminary breakfast or diurnal variations.

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THE SEDIMENTATION TEST.*

ITS USE AS A ROUTINE PROCEDURE IN PSYCHIATRIC INSTITUTIONS.

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Even though we realize there is a great prevalency of somatic disorders amongst the insane, yet it is not an easy matter to detect these conditions. One reason for this is that very often satisfactory physical examinations cannot be made due to the patient's lack of cooperation.

As a rule, psychotic individuals are fairly cooperative for physical study; however, there are very many who are not. For example, it is almost an impossibility to make a competent examination of acutely disturbed or maniacal patients; they are too excited, too noisy and too restless. In cases of involutional melancholia, especially where there is marked agitation, physical examinations are frequently unsatisfactory; the patients are too disturbed for cooperation. Often in studying cases of dementia præcox, especially the catatonic types and the hebephrenic type, we are confronted with the same difficulty.

Then, again, not uncommonly are the patients so engrossed in their hallucinations and delusions that they fail to make subjective complaints of their physical disorders. Because of this, very commonly early diagnoses of somatic diseases are not made. One patient (case 5) for days kept pacing up and down the corridors in a state of agitative depression, bewailing and bemoaning the fact she stole a knife twenty-five years ago. Not a complaint did she make of any pain, yet examination disclosed a discharging left ear, with extensive left mastoid involvement!

Also, in cases where there is marked mental deterioration patients do not know enough to report their subjective symptoms; therefore, it is not until late that that a disease is detected.

Even in dealing with cooperative patients, oftentimes, as we know, it is difficult to detect pathology.

* From the Psychiatric Service of the Worcester State Hospital.

In this article we are recommending a certain laboratory test, the erythrocyte sedimentation reaction, to be used as a routine procedure in psychiatric institutions. This test has been of practical aid to us in detecting the presence of many somatic disorders, especially in dealing with uncooperative patients. It has been of some value in medical and psychiatric diagnosis and differential diagnosis; also it has proved to be helpful in determining the physical and mental clinical conditions of patients.

By the erythrocyte sedimentation phenomenon we mean the speed with which the red blood cells settle in an anti-coagulative column of blood. Without going into detail concerning the history of the erythrocyte sedimentation reaction, we may mention that Galen is credited with being the first to describe this phenomenon under the name of *crusta phlogistica*. Later John Hunter¹ observed that the speed with which the erythrocytes settled varied directly with the severity of the disease present. It was not until 1918, when Fahraeus² published his article on the sedimentation time in pregnant women that so much attention has been given this phenomenon. Since then numerous articles have appeared in all branches of medicine concerning the use of the sedimentation reaction.

It is not within the scope of this paper to discuss the various theories offered explaining the sedimentation phenomenon. As yet no satisfactory hypothesis has been found. Fahraeus,³ Risse,³ and Mikulicz-Radecki⁴ feel that that cause is perhaps due to the instability in the ratio of the serum globulin and albumin fractions. They have observed a decrease in the albumin fractions and an increase in both the fibrinogen and the globulin elements, thus resulting in an increased blood viscosity with a succeeding loss of surface tension.

A chemico-electro-physical explanation has been suggested by Vorschutz⁵ and Clausen.⁶ They believe that, owing to a definite decrease in surface tension and an increase in the blood lipoids, there results a decrease of the electro charges in the erythrocyte.

It has also been suggested that the sedimentation phenomenon depends on some specific ferment in the plasma.

Regardless of theory, the fact remains that the speed of the sedimentation reaction is in more or less direct proportion to the amount of toxicity and cell destruction present in the body. Utiliz-

ing this fact, the test has been extensively employed in almost all branches of medicine, and it has been found to be of great clinical and practical value.

In the field of tuberculosis the reaction has found wide clinical application. Dreyfus,⁷ Delhayé,⁸ von Tegtmeier,⁹ and others feel it to be of greater help than the temperature chart. Morriss,¹⁰ Gardère and Lané,¹¹ Morriss and Rubin,¹² and others believe it to be a very reliable indicator of the amount of pulmonary activity present, while Cutler¹³ finds it to be of greater help than the temperature, pulse or weight curves.

In obstetrical and gynecological studies this test has also been extensively used. Friedlaender¹⁴ came to the following conclusions:

1. Although the blood sedimentation test yields no practical results for the diagnosis of pregnancy until a general biologic reaction has taken place, *i. e.*, after the fourth month, its negative findings are of material aid in differentiating pregnancy from simple tumors after the fourth month.

2. It is of some aid in diagnosing unruptured ectopic.

3. Ruptured ectopic, having about the same sedimentation time as pelvic inflammatory conditions, must be diagnosed by exclusion.

4. The diagnosis of pelvic inflammatory conditions can readily be confirmed by the test.

5. The reaction is especially valuable in gynecology to determine whether a patient with an inflammatory adnexal disease, but with a normal temperature and a normal blood count, should be subjected to operation. A sedimentation time under 30 minutes means active infection, under one hour latent infection and the patient must not be operated upon. However, a sedimentation time of over two hours excludes all possibility of a latent or active infection and the patient can safely undergo operation.

6. No dilation, curettage or other surgical interference should be undertaken before a sedimentation test has been made in order to exclude latent infection of the genital organs.

Noyes and Corvèse¹⁵ advocate the use of the sedimentation test in all gynecological cases where a leucocyte count is desirable; while Baer and Reis¹⁶ believe the test to be of value in determining the prognosis and treatment of many pelvic disorders. Rumpf, Powny, Falta and others have found the sedimentation test to be of greater value than the leucocyte count or temperature chart.

In surgical studies many observers, including W. Lohr,¹⁷ Gragert,¹⁸ and Haller,¹⁹ feel that the sedimentation test is helpful in diagnosing a great many surgical conditions. They believe the test to be a reliable indicator of the acuteness and extensiveness of inflammatory lesions, and that it is an aid in differentiating benign from malignant growths. They also have found the test useful in determining the time for surgical intervention. Rubin²⁰ claims that the test is a more reliable indicator of the condition of the patient than is the temperature chart.

It has been only recently that the erythrocyte reaction has been studied in psychiatry. Plaut²¹ observed the reaction was quicker in the majority of cases of general paresis and psychoses with cerebral arteriosclerosis than in the majority of cases of psychopathic personalities, melancholia, dementia præcox and epilepsy. Runge,²² Paulian and Tomovici,²³ and Demetre and Tomovici²⁴ reported an acceleration of the test in cases of general paresis. Glaus²⁵ found that the erythrocyte test was quickened in cases of neuro-syphilis, general paresis, senile dementia, catatonia and in the period immediately following an epileptic attack. On the other hand, the sedimentation time was normal in cases of manic depressive psychoses, psychoneuroses, psychopathic personality and in paranoia. Jacobowsky²⁶ believes that the speed of the reaction is directly proportional to the amount of organic deterioration present. Pijper and Russell²⁷ have found that untreated cases of general paresis gave increased readings, while cases treated with malaria or tryparsamid that showed a good remission gave normal findings. In a series of over two hundred cases done at the Worcester State Hospital the present writer²⁸ came to the following conclusions:

1. The acceleration of the erythrocyte sedimentation reaction varies directly with the amount of mental deterioration, the amount of organic destruction, and the amount of toxicity present.
2. Unless complicated by physical diseases, the sedimentation reactions are normal in cases of manic depressive psychoses, psychopathic personalities, psychoneuroses, and paranoia.
3. Increased readings are found in all cases of senile psychoses, psychoses with cerebral arteriosclerosis, general paralysis, neuro-syphilis, psychoses with mental deficiency, psychoses with somatic

disease, acute types of alcoholic psychoses, in many cases of epileptic psychoses and involutional melancholia.

4. In dementia præcox the findings in the simple and paranoid types tend to give normal readings, while the hebephrenic and chiefly the catatonic types tend to give slightly accelerated reactions. Cases with marked mental deterioration give increased readings. No cases of dementia præcox gave a marked increase unless complicated by some physical disorder.

5. The sedimentation reaction is of limited aid in psychiatric diagnosis.

6. Repeated tests are helpful in determining the clinical condition of the patient.

7. Because the sedimentation test is a reliable and efficient indicator of many somatic diseases, it is of most practical value in dealing with psychotic patients.

In general, there are two principal methods for doing a sedimentation test: the first is the Westergren,²⁰ or distance method; while the second is the Linzenmeier,²¹ or time method. In the former the distance in millimeters is noted through which the red blood cells settle in a given time. Fahraeus² was the first to advocate this technique. Later it was modified by Westergren. Fischel²² used more or less the same technique, but expressed his findings in per cent instead of in millimeters.

In the Linzenmeier method the underlying principle is in noting the time it takes for the red blood cells to settle through a definite given space. Linzenmeier used tubes 26.5 cm. long, with an internal diameter of 5 mm. His results were recorded in minutes, the time in which the erythrocytes settled from the filling mark to an empirically taken second mark, 18 mm. lower than the first. According to this method, the normal sedimentation time for men is from 1200 to 1400 minutes, while for women it is from 800 to 1000 minutes, and during menstruation it is lower.

In the above methods it is necessary to do venepunctures. However, many micromethods have been suggested. Biernacki,²³ Marciano,²⁴ Von Brinckman and Wastl,²⁵ Morriss and Rubin,²⁶ Cutler,²⁷ and others have described techniques in which a small amount of blood is taken either from the finger tip or from the ear.

Many modifications of both the Westergren and Linzenmeier methods have been advocated. There is no standard technique;

therefore, much confusion has resulted in the registration of findings. At the Worcester State Hospital the following technique was found to be the most suitable. At the same time the routine blood Wassermann is done, blood is taken for a sedimentation test.

A 3.8 per cent solution of sodium citrate is drawn up to the .4 c. c. mark of a sterile 2 c. c. record syringe, which has been fitted with an adapter for a gage 19 needle. A venepuncture is then done and the blood is drawn up to the 2 c. c. mark. Leaving the needle *in situ*, the syringe and its adapter are withdrawn. Blood is then collected for the Wassermann test by either the drop or syringe method. The citrated blood is transferred into a small Wassermann test tube. If several patients are being done at the same time, all that is necessary is to wash out the syringe with sterile water a few times before drawing up the sodium citrate for the new test.

The small Wassermann tube containing the citrated blood is inverted once. The blood is drawn up to a long 1 c. c. serological pipette, graduated into a hundred parts, the distance between the first and the last graduations being 19 to 23 cm. The pipette is next placed into a specially constructed wooden rack. Readings are taken in per cent at the end of the first and second hours.

Like the leucocyte or red blood count, the sedimentation readings vary within normal limits. As was brought out in a previous article,²⁸ readings up to 6 per cent for males and 11 per cent for females at the end of the second hour may be said to be normal. We may consider 6 and 7 per cent in males and 11 and 12 per cent in females as high norms. It must be remembered, however, that the sedimentation reaction is slightly increased in the very young and the very old and also during menstruation.

The following cases are a few of the many in which the sedimentation test proved to be of practical value:

CASE I.—M. C. K., a white female, aged 50. Ever since early adult life patient was said to be psychotic. In 1924 patient was transferred from another institution to the Worcester State Hospital. On admission her physical examination disclosed no gross abnormalities.

During her residence at the Worcester State Hospital patient was markedly hallucinated and deluded; complained bitterly that her enemies were destroying her insides by means of all kinds of malicious contraptions. Patient also entertained very many distressing sexual delusions. Her insight and judgment were nil. There was evidence of marked mental deterioration. Her mental diagnosis was dementia præcox, paranoid type.

On August 19, 1926, a routine sedimentation test was done. Because of the markedly increased readings (14 per cent for the first hour and 26 per cent for the second), the patient was thoroughly studied. The physical findings together with the X-ray and fluoroscopic findings, etc., pointed to a malignancy of the right lung, probably mediastinal in origin.

On October 4, 1926, another sedimentation was done. The readings were 18 per cent for the first hour and 38 per cent for the second. The patient steadily became worse and in a few weeks she died.

In the above illustration, had it not been for the sedimentation reaction, the somatic disorder probably would not have been discovered so soon. The patient was too absorbed in her hallucinations and delusions to record any subjective complaints.

CASE 2.—J. S. H., a female, aged 41. Married and has five children. When patient was about 30 years old, she gradually became psychotic. She thought her neighbors were trying to harm her, and in order to avoid them she moved several times.

In April, 1923, patient was committed to the Worcester State Hospital. On admission her physical examination was essentially normal. During her residence here, patient's mental condition became worse; she grew more apathetic and indifferent; became more seclusive; did not speak unless addressed; was partially oriented. Her memory for remote and recent events was greatly impaired; her insight and judgment were markedly deficient. She had many ideas of references and expressed delusions of a persecutory nature. There were auditory and visual hallucinations present. Patient was diagnosed dementia præcox, paranoid type.

A routine sedimentation test was taken on August 27, 1926. The readings were 51 per cent for the first hour and 66 per cent for the second. Because of these decidedly high findings a physical examination was done. Patient was found to be a poorly nourished, pale, middle aged woman. Her abdominal examination disclosed the presence of a large, round, elongated, hard mass extending from under the liver almost to the crest of the ilium. The mass moved with respiration. At no time did the patient complain of any discomfort or pain. On the same day a blood count was taken. It showed: Red blood cells, 3,710,000; white blood cells, 6250; hemoglobin, 40 per cent; polymorphonuclears, 65 per cent; lymphocytes, 27 per cent; eosinophiles, 4 per cent; transitionals, 4 per cent. The urine showed: Color, dark amber; specific gravity, 1.020; reaction, acid; albumin, slight trace; sugar, present; indican, slightly increased; microscopic examination, many pus cells and a few large round cells. An X-ray of the kidneys disclosed an enormous calculus of lobular shape about 2 inches by 4 inches in the right kidney region. There were scattered particles of injection below, probably representing small cavities in kidney below calculus. The organ was not outlined.

Clinically patient became worse and had to be confined to her bed. A second sedimentation test taken September 1, 1926, showed the readings to be 46 per cent for the first hour and 62 for the second. Temperature,

101; pulse, 84; respiration, 24. Patient's condition was diagnosed hypernephroma of right kidney.

As in the first case, the sedimentation test was instrumental in detecting the presence of the somatic disorder. The increased readings warned that something was wrong; it was a danger sign; it invited further investigation.

The second sedimentation test was helpful in determining the clinical condition of the patient, and also it indicated the progressiveness of the disease present.

CASE 3.—M. G., a colored girl of 17. Family history of no importance. As a child, patient was wilful and impudent. Went to school as far as the 7th grade, then left and went to work. Changed jobs frequently. Since the age of 12, patient was very promiscuous and solicited herself for immoral purposes; was often intoxicated and on several occasions remained away from home for a long period of time. During her wanderings, she contracted gonorrhea for which she received rigid treatment. In January, 1926, she gradually developed psychotic ideas; became hallucinated in both auditory and visual fields; made a few attempts at suicide; refused to eat, thinking the food was poisoned. Patient was admitted to the Worcester State Hospital in the latter part of January, 1926. On admission she was resistive, irritable, and assaultive. Gradually she became more passive and indifferent; showed psychomotor retardation. Her orientation was fair; her memory for both remote and recent events was slightly impaired. No hallucinations nor delusions were obtained at this time.

On admission her physical examination showed a well-developed and well-nourished colored girl, tonsils enlarged, otherwise physical examination was essentially negative. A vaginal examination, done January 30, 1926, disclosed a muco purulent leucorrhea; perineum was in good condition; vaginal smear contained no gonococci. Patient's mental condition gradually improved.

On September 3, 1926, a routine sedimentation reaction was done. The readings were 6 per cent and 21 per cent for the first and second hours respectively. Two weeks later patient began complaining of generalized abdominal pains. Her temperature and pulse rates were slightly elevated. A few days later the pains became localized in left lower quadrant. Examination disclosed a small but markedly tender mass in left iliac region. On vaginal examination the cervix was found to be soft and low; vaginal wall was relaxed; uterus was slightly retroverted and appeared to be enlarged. There was marked tenderness in left fornix. Patient became nauseated and vomited. A first case was thought to be that of pregnancy, complicated by a left pyosalpingitis, probably gonorrheal in origin. Another vaginal smear taken October 5, 1926, showed no gonococci present. A second sedimentation reaction was done October 1, 1926. The readings were 20 per cent and 38 per cent. The temperature was 101; pulse, 92; respiration, 24. Patient's physical condition progressively got worse. On November 3 she

was operated upon; a left salpingectomy and oophorectomy was done. The operation confirmed the diagnosis of left pyosalpingitis and ovaritis of gonorrheal origin.

Here again, as in the preceding cases, the increased sedimentation readings were a warning that something was wrong. Even before the patient complained of physical discomfort (and here patient was of sufficient mentality to know) the increased sedimentation readings suggested pathology. The second sedimentation test showed a marked increase over the first, indicating a progressive and probably infectious condition.

In this case the sedimentation test was also helpful in the differential diagnosis. The findings pointed against a benign growth of the uterus or a cystic condition of the ovary. It also helped to rule out pregnancy, unless the pregnancy was over four months' duration.

CASE 4.—N. M. U., a female, aged 21. Family history poor; mother a prostitute; father of subnormal mentality; a sister feeble-minded.

As a child, patient was very troublesome, always getting into mischief. She showed a precocious sexual interest. As she grew older, she became very promiscuous, committing many immoral and unnatural acts. Because of her misdemeanors, patient was sent to a reformatory school where she remained almost two years. No sooner was she discharged than she got into more difficulties. This time she was sent to a state hospital for mental observation. There she was judged to be mentally deficient, but not psychotic. Again she was sent back to the reformatory school. While there, she attempted suicide several times and because of this, she was committed to the Worcester State Hospital in April, 1925. Her physical examination on admission found her to be well developed and well nourished. Her heart, lungs, abdomen, etc., were essentially normal. Vaginal examination at that time disclosed no pathology. During her residence here, patient was pleasant, agreeable, and cooperative. No hallucinations, delusions, illusions, nor misinterpretations were elicited. Memory was fair; orientation was perfect, but she was found to be of subnormal mentality. She had very little control over her will power and could not resist temptations.

In June, 1926, patient was allowed out on visit. For a few months, she got along well and then again she became promiscuous, keeping late hours, and on one occasion she remained away all night. Following this, patient was returned to the hospital. This was in September, 1926.

On September 30, 1926, a routine sedimentation test was taken. Readings were 4 per cent for the first hour and 20 per cent for the second. The patient did not complain of any discomforts. However, a few days later, she began to have pains in left lower quadrant. Her temperature and pulse were slightly elevated. Physical examination disclosed marked tenderness and rigidity in left lower quadrant. Vaginal examination showed the left

fornix to be markedly tender. A vaginal smear taken at this time contained no gonococci. The diagnosis of subacute salpingitis was made.

Upon questioning, patient admitted for the first time that she contracted gonorrhea but was afraid to tell any one.

The accelerated reaction cautioned that there probably was some organic destruction occurring in the body.

CASE 5.—C. U., a female, aged 47. Family history of no importance. Patient was born in Sweden; early development normal. History of previous attack of mental disorder fourteen years ago, following birth of child. At that time she was committed to Worcester State Hospital and diagnosed dementia præcox. While there, patient had an extensive operation on left jaw. Patient was discharged August 22, 1913. About the first of January, 1927, patient became agitated and depressed; attempted suicide several times. For this she was committed again to Worcester State Hospital in February, 1927. Patient presented a picture of agitated depression; expressed many self-accusatory ideas.

Physical examination done at that time found patient to be essentially normal, except for an old extensive operative scar on right side of face and neck. There were enlarged posterior cervical glands present. The ear, nose, and throat examination disclosed no abnormalities.

Patient's mental condition became rapidly worse. She grew more restless, agitated, was decidedly uncooperative; made a few attempts at suicide. Her ideas of unworthiness increased.

A sedimentation reaction was done on May 7, 1927. The readings were 9 per cent and 20 per cent. Several days later the patient's left ear began discharging. Temperature was 100.4; pulse, 100; respiration, 20. X-ray of left mastoid showed moderate clouding. On April 11, 1927, a mastoidectomy was done. The diagnosis of chronic mastoiditis was confirmed by the operation.

The sedimentation test indicated that some pathological process was present. Despite the intense pain the patient must have experienced, she was so absorbed in her delusions that she did not make any subjective complaints, but continued to cry pitifully because she thought she was a bad woman.

In the following cases, the sedimentation test was done as a routine procedure on newly admitted patients. Whenever a markedly increased reaction was obtained, a thorough study was given the patient.

CASE 6.—M. G., a male aged 56. Family history of no importance, patient was born in Canada; early development normal. Until the onset of patient's present illness, he was a steady worker. Although in the habit of taking alcohol, patient was never found intoxicated. In character, patient was good-natured, pleasant, self-confident, and independent. Four weeks prior to admission, patient began to act peculiarly; he was confused; thought

he was hunting, spoke of the game he killed when in reality he remained at home all the time. He was completely disoriented as to time and place. Showed marked falsification. In the meantime, patient had difficulty in walking and for a few weeks prior to admission was confined to bed.

Shortly after admission to the Worcester State Hospital, a sedimentation test was done on patient. The readings were 5 for the first hour and 28 for the second. The physical and neurological examinations showed a middle aged man who had difficulty in walking. His gait was spastic and he walked on a broad basis; muscles of the extremities and thorax regions showed marked atrophy. Occasional fibrillary twitchings of the right arm were present, and at times a coarse tremor of 10-20 oscillations occurred in right arm. There was a generalized paresis of the extremities. Coordination tests were poorly done, adiadiadokinesia present; pectorals, biceps, triceps, and radio periosteals reflexes were all markedly hyperactive, more on left than on right. A bilateral Hoffmann was present. The ham strings, knee jerks, ankle jerks were also hyperactive. Plantar extension was present on both sides; abdominal and cremasteric reflexes were absent on both sides. There were no sensory disturbances. The cranial nerves were essentially normal. Heart, lungs, and abdomen were essentially negative. Blood Wassermann and spinal fluid examination were also normal. The patient's diagnosis was psychosis with other organic brain disease; namely, amyotrophic lateral sclerosis.

Even before patient was examined, the increased readings indicated that some definite pathology was present.

CASE 7.—A. F., a white female, aged 65. Family history unimportant. Patient was born in Ireland; had some grammar school education. When eighteen years of age, patient married. She got along well until two months prior to her admission to the Worcester State Hospital, when she began to show psychotic factors. She misidentified people; communicated with her dead sister. Later, she became depressed. Patient was committed to the Worcester State Hospital on March 9, 1927.

A sedimentation test was done soon after admission and was found to be 33 per cent the first hour and 54 per cent for the second. Physical examination showed a pale-looking, obese female; both ears discharging; otherwise no abnormalities present. Urinalysis and blood chemistry proved the presence of diabetes mellitus. Later, a social history was obtained and it was found that patient had had diabetes for the past two years.

When the patient was admitted to hospital, her mental condition was such that she did not complain nor give any information concerning her diabetic condition. The markedly increased readings warned that some grave disorder existed. But it was not until complete laboratory examinations were made that the diabetic condition was discovered.

CASE 8.—M. F. H., a white female, aged 35. Very little known of family history or of patient's early development. In 1920, patient was committed to the Worcester State Hospital for observation because of her peculiar behavior. After seven days, patient was discharged with diagnosis of mental deficiency without psychosis. Since leaving the hospital, patient worked steadily until a month prior to her second admission, when she began to talk in a rather foolish manner; would pick up imaginary articles from the air or floor; took on a constant rambling talk; showed marked mental deterioration, and her insight and judgment were greatly impaired. Patient could not give any information concerning herself.

A few days after her commitment to Worcester State Hospital, a sedimentation test was taken. The readings were markedly increased (23 per cent for the first hour and 41.5 per cent for second). A physical examination done at that time showed a gumma of the nasal septum; one of the left radius; there was a perforation of the soft palate. Blood Wassermann was positive; spinal fluid Wassermann was negative; and colloidal gold curve was flat. Patient's final diagnosis was psychosis with syphilis.

Although the patient's somatic disorder was easily discovered upon physical examination, yet the accelerated reaction, even before a physical study was made, indicated some existing pathology.

CASE 9.—C. M., a female, aged 43. Nothing known of family history or early development. Patient apparently got along well until December, 1926, when she contracted the grippe. Soon after, she became depressed, complaining considerably and began to show psychotic traits. Because of this, she was committed to the Worcester State Hospital in April, 1927.

On the 4th, a sedimentation test was done. The readings were 6 per cent and 14 per cent. Physical examination showed the presence of an irregular mass in the upper right quadrant and kidney region. A gall bladder and gastrointestinal series showed a very large calculus of right kidney, forming a cast of the pelvis and calices. The kidney was enlarged; gall bladder negative; stomach showed no filling defects. Blood Wassermann and spinal fluid examinations were essentially normal. On April 22, the urine showed: color, cloudy; specific gravity, 1.013; albumin, slight trace; sugar, absent; acetone, absent; microscopic examination, abundant leucocytes and rare bladder cells.

Patient was operated on. A right nephrectomy was done. Postoperative diagnosis was right nephrolithiasis.

Again the sedimentation test was found to be an efficient detector of disease.

CASE 10.—R. W., a white female, aged 44. Family and personal history unknown. Patient was arrested for drunkenness, May 20, 1927. Because of her hallucinations and delusions, together with her peculiar behavior, she was committed to the Worcester State Hospital in June, 1927.

On admission patient was very noisy, resistive, and uncooperative. She was disoriented in all spheres; had no insight as to her condition, and showed very poor judgment. Because of her mental condition, she could not give any accurate information about herself.

A sedimentation test done June 13, 1927, was 32 per cent for the first hour and 42.5 per cent for the second. Physical examination disclosed the pupils to be irregular but equal; they reacted poorly to light and accommodation; tonsils were enlarged; marked hyper-reflexia present. On June 15, a blood Wassermann was done, but was reported unsatisfactory. This was later repeated and found to be positive. A spinal fluid examination gave a positive Wassermann, the colloidal gold curve was 5555—. Her diagnosis was acute alcoholic hallucinosis, occurring in a case of general paresis.

Although cases of general paresis give accelerated sedimentation reactions, yet the readings are not so markedly increased as in the above case unless complicated by luetic involvement of other parts of the body or superimposed by another toxic or destructive condition. In this case the acute alcoholism complicated the picture. Because of the general toxicity in the body, due to the alcoholism, the sedimentation readings were still markedly increased.

Several weeks later another sedimentation test was taken. This time the readings showed a marked decrease in comparison with the first test.

CASE 11.—F. B. K., a male, aged 53. Family history not important. Until 1926 patient got along well. He then began to act in a rather peculiar manner; became restless and talkative; developed delusions of grandeur; refused to work because he said that he had millions of dollars; became confused and disoriented. Patient was committed to Worcester State Hospital on May 10, 1927.

Soon after admission a routine sedimentation test was taken. The readings were 11 per cent for the first hour and 24 per cent for the second.

On physical examination, patient was found to be a poorly nourished, poorly developed, feeble, middle aged man. He had interstitial keratitis of the left cornea; small scar in right eye; blindness of the left eye; right pupil was fixed; the tongue deviated to right with marked bilateral tremor. His chest was emphysematous; there was cardiac hypertrophy with myocardial degeneration and mitral regurgitation present. Patient had a tabetic gait; knee jerks and ankle jerks were absent on both sides. There were marked sensory changes; hypesthesia and hypalgesia of lower extremities. Patient had loss of bladder control. Blood Wassermann taken later was positive. Spinal fluid examination showed: globulin, slight trace; colloidal gold, 55555—; Wassermann, positive. A urinalysis was essentially normal.

On June 2, 1927, patient was inoculated with malaria. After a few chills, he died. The diagnosis was tabo-paresis with marked luetic involvement.

As in case 10, the markedly increased readings indicated the presence of something else other than an ordinary case of general paresis.

CASE 12.—J. J. S., a white male, aged 52. Very little known of patient's history, except that he drank to excess for years and was arrested several times for drunkenness. Patient was committed to the Worcester State Hospital on March 3, 1927.

On admission he was very much confused; answered questions irrelevantly and incoherently; was delusioned and hallucinated; was out of contact with his environment.

A sedimentation test taken shortly after admission showed increased findings. The readings were 13 per cent for the first hour and 31 per cent for the second.

Physical examination disclosed a poorly nourished and poorly developed individual with a funnel shaped thorax. Lung findings indicated the presence of a bilateral chronic fibroid phthisis with marked cavity formation. The X-ray findings confirmed the diagnosis.

Because of the patient's mental condition, he was unable to make any subjective complaints; neither was he able to give any information in regard to his personal history. The increased sedimentation findings indicated existing pathology.

COMMENTS.

The erythrocyte sedimentation test may be likened to the leukocyte count. The white count varies under normal conditions; it is increased in many diseases, yet not all pathological processes are accompanied by a leukocytosis. So it is with a sedimentation reaction; it varies within normal limits; it is increased in many disease processes; however, there are many diseases in which the readings remain unchanged. As with the leukocytes, an increased sedimentation reaction, unless due to error of technique, *always* indicates pathology. On the other hand, a normal reaction does not exclude diseases. Like the white count, the sedimentation test does not localize nor name the pathology present. Neither does it act as a substitute for physical examination. On the contrary, by the very nature of the test, it stimulates further physical and laboratory investigations.

CONCLUSIONS.

Because the sedimentation reaction is helpful in determining the diagnosis, the differential diagnosis, and the progress of many mental and physical diseases; and because it is an efficacious and

reliable detector of many pathological conditions, especially in dealing with the insane, it is of sufficient practical and clinical value to warrant its use as a routine procedure in psychiatric institutions.

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THE ADRENALIN BLOOD PRESSURE CURVES IN DEMENTIA PRÆCOX AND THE EMOTIONAL PSYCHOSES.

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W. Schmidt,¹ in 1914, was the first to call attention to the observation that cases of dementia præcox, especially the hebephrenic and catatonic types, did not show the usual increase in blood pressure after the administration of adrenalin. Since then, a number of investigators have reported quite contradictory findings. Eighty per cent of the schizophrenic patients examined by Neubürger² showed no or extremely slight elevation of blood pressure as a result of subcutaneous injection of adrenalin. Lowrey and Wright³ examined seventy-eight psychopathic individuals and came to the conclusion that a rise of blood pressure occurs in a great number of præcox patients and fall of pressure only in a few cases. Büchler,⁴ on the other hand, who made use of all the newer methods of investigating endocrine and autonomic functions in mental diseases and paid particular attention to adrenalin tests, says that the assumption that dementia præcox patients are vagotonic and that in manic-depressive insanity sympathicotonus predominates cannot be proven but that it probably holds good in most cases. He goes on to state that the reactions on the part of the vegetative system fluctuate in a manner corresponding to the clinical variations in a periodic type of schizophrenia. Stuurman⁵ found the blood pressure reaction after injection of 0.7 mgm. of adrenalin increased in anxiety sufferers, very slight in quiet melancholies; he did not see any definite difference between the reactions of schizophrenics and that of other cases.

These contradictory findings have naturally had a discouraging effect on the evaluation of the adrenalin test. But, fortunately, the discrepancy in the results obtained by the various investigators lies not in an indefinite reaction of the blood pressure on the administration of the drug but in the undue importance attached to the question of rise and fall of the pressure. Dresel,⁶ after the injection of 1 c. c. of adrenalin subcutaneously, measuring the blood pressure first every two minutes, and after a quarter of an hour every five minutes for at least sixty or seventy minutes, found that in normal individuals where the vagus and sympathicus are well balanced there is a gradual increase in the blood pressure which reaches its highest level after about ten to fifteen minutes and then

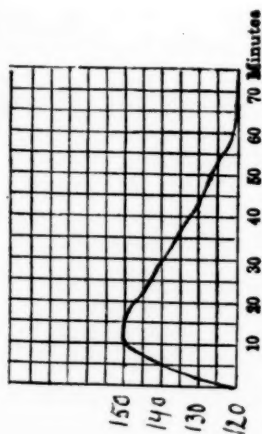
sinks gradually down to the original height in twenty minutes or more. The sympathicotonic curve is characterized by a rapidly increasing pressure, with a rise of forty to fifty to sixty mm. Hg. In patients with parasympathetic irritability (vagotonics) the prompt action of adrenalin on the blood pressure is counteracted by the vagustonus which strives after compensation, as does the attacked party in a tug of war. Eppinger and Hess⁷ compared the antagonism between the vagus and the sympathicus with a beam where the equilibrium is disturbed by the addition or taking off of a weight on one scale with the strictly opposite effect on the other side. But experience teaches that hypertonicity in the one system does not necessarily exclude an increase of the tonus in the other. We may rather compare the relation of the vagus and sympathicus, as Dresel does, with the conditions prevailing in a tug of war. On each side of the rope there is a group of contestants. At first the rope is suspended just so that it does not touch the ground. Equal forces work on both sides. When the sign for the beginning of the contest is given and the party on the other side begins to multiply its energy, then the other, antagonistic, party will do the same and try to repel the attack. A constant to-and-fro fluctuation results, but if both opponents have equal strength it is always possible to regain the original equilibrium. Now if one of the two groups receives additional help (the injection of adrenalin in our case) and thus becomes stronger, then the other will not give in immediately. The weaker party will try to increase its energy to the utmost degree until finally the greater force will obtain the victory. The vagus and sympathicus act very much like the contestants in a tug of war. Stimulation of the sympathicus is not identical with paralysis of the vagus which rather responds with an attempt to repel the attack.

Therefore, in the most pronounced cases of vagotonia, we find after administration of adrenalin an initial fall of the blood pressure below the original level as a result of an attempt at compensation or even hypercompensation on the part of the vagus. In cases not so severe, there is no response for about two to five minutes after the injection until the assistance given the sympathicus by the adrenalin proves stronger than the vagustonus. In cases of mild hypertonicity of the vagus, finally, we find an increase in the pressure which, however, is very slow and may, or may not, reach as high a level as in normal individuals.

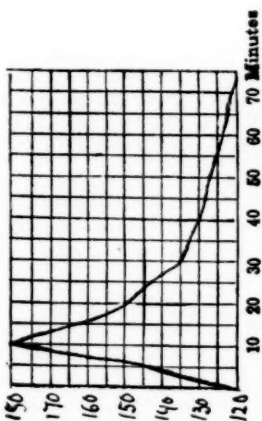
We must understand this if we wish to give the right interpretation to the effect of adrenalin injections upon the autonomic

EFFECT OF ADRENALIN ON THE BLOOD PRESSURE OF NON-PSYCHOTIC INDIVIDUALS.

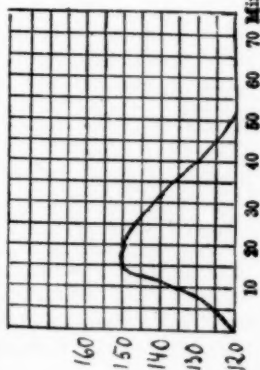
(Curves taken from Dresel's "Diseases of the Vegetative Nervous System").



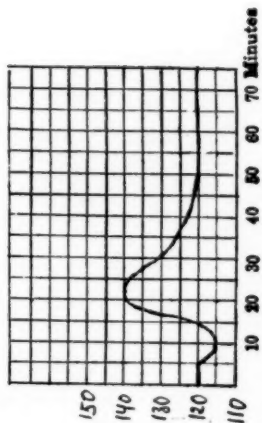
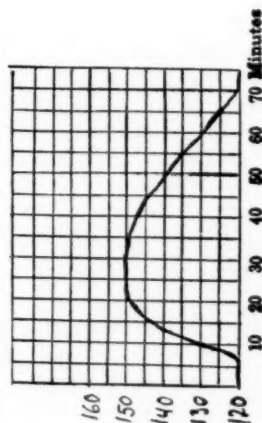
Normal
Adrenalin Blood Pressure Curve.



Sympathicotonic
Adrenalin Blood Pressure Curve.



Vagotonic Adrenalin Blood Pressure Curves.



nervous system in dementia præcox and in the emotional psychoses. Dresel's very elaborate standard curves were taken as measures in the evaluation of the blood pressure curves obtained after the subcutaneous injection of 1 c. c. of adrenalin chloride solution 1:1000. Thirty-four cases of unquestionable dementia præcox (twenty-nine male and five female) and nine cases of manic-depressive psychosis (eight male and one female; four manic and five depressed) were examined.

I. CASES OF DEMENTIA PRÆCOX.

A. BLOOD PRESSURE UNCHANGED.

CASE 1.—L. Q., male, age 26, height 5' 6", weight 128 lbs.; single. Committed April 1919. Mother has manic-depressive psychosis, maternal great aunt was insane. Originally hebephrenic attitude has changed into typically catatonic condition with mutism, negativism, stereotypy and catalepsy. Aschner's test (oculocardiac reflex) yielded a reduction in the pulse rate of 13 beats per minute.

Injection of 1 c. c. of adrenalin did not alter the blood pressure; a straight line, instead of a curve, was obtained. Administration of 2 c. c. of the drug stimulated the sympathicus to such a degree that any counteraction on the part of the vagus was oppressed and a typically sympathicotonic curve the result.

B. FALL OF BLOOD PRESSURE WITH NO RISE FOLLOWING.

CASE 2.—C. I., male, age 38, height 5' 10½", weight 139 lbs.; single. Committed January 1916. Catatonic type with mutism, negativism, impulsiveness. Aschner's test: Reduction of 1 beat per minute.

Adrenalin test yielded a strongly vagotonic curve with fall of the blood pressure to 5 mm. below the original level and return to the same after 35 minutes.

CASE 3.—C. T., female, age 27, height 5' 1", weight 140 lbs.; divorced, two children. Committed September 1925. Catatonic type with hallucinations of hearing and sight, mute a great deal of the time, directed by voices to do certain things, very impulsive.

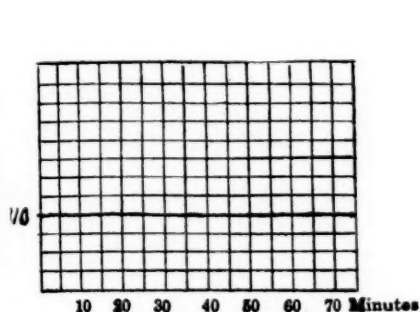
After administration of adrenalin, the blood pressure dropped to 38 mm. below the starting point, returning to it after 55 minutes.

CASE 4.—A. A., female, age 40, height 5' 3½", weight 110 lbs.; single. Committed August 1925. Catatonic type with marked emotional indifference, masklike expression of face, very seclusive, some delusions of persecution.

Adrenalin caused a fall of the blood pressure to a maximum of 10 mm. Hg.

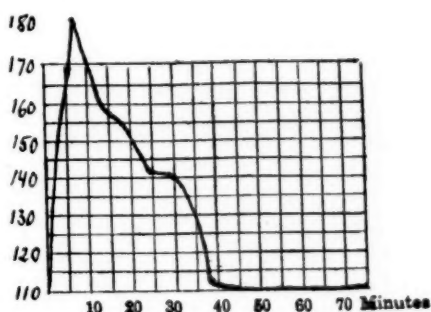
CASE 5.—J. J., male, age 23, height 5' 8", weight 132 lbs.; single. Committed July 1907. Both maternal grandparents and two maternal uncles were insane. Deteriorated catatonic type with mutism, negativism, mild catalepsy. "One of the most demented patients in the Institution."

After taking a drop of 10 mm. Hg., the blood pressure returned to the usual height at the end of 15 minutes.



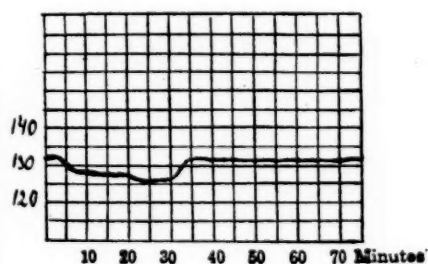
Case 1.

After 1cc. of adrenalin

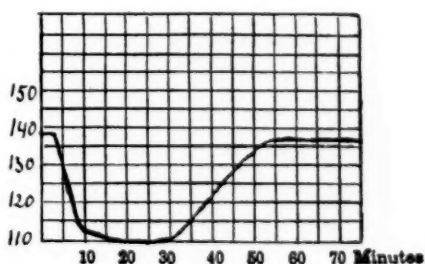


Case 1a.

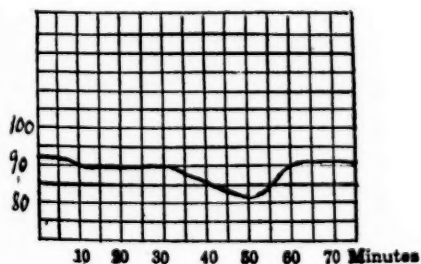
After 2cc. of adrenalin



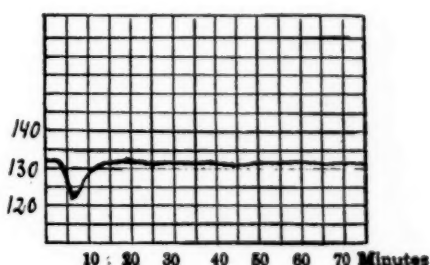
Case 2.



Case 3.



Case 4.



Case 5.

CASE 6.—M. A., male, age 20, height 5' 6½", weight 98 lbs.; single. Committed September 1926. Maternal cousin epileptic. Sister had two "nervous breakdowns." Originally diagnosed as manic-depressive psychosis of the depressed phase. Diagnosis later changed into that of dementia præcox, catatonic group. Very retarded, has hallucinations of hearing, receives orders from the Lord, prays a great deal, assumes certain fixed attitudes for several hours.

After the injection of adrenalin, the blood pressure dropped 50 mm. below the original level within the first two minutes, returning to the same after one-half hour.

C. DOUBLE FALL OF BLOOD PRESSURE.

CASE 7.—B. H., male, age 19, height 5' 9¼", weight 125 lbs., single. Committed November 1924. Mother is insane (dementia præcox). Hebephrenic type with auditory and visual hallucinations, had communications with spirits, possesses power of hypnotism and telepathy, has many mannerisms. Aschner's test: Reduction in pulse rate of 5 beats per minute.

Blood pressure fell twice before returning definitely to the original height.

CASE 8.—M. T., female, age 31, height 5' 1", weight 92 lbs.; single. Committed October 1925. Simple type with rapid deterioration, extreme emotional indifference, transitory hallucinations of hearing and sight.

Injection of adrenalin was followed by a double fall of the blood pressure, the maximum reduction amounting to 18 mm.

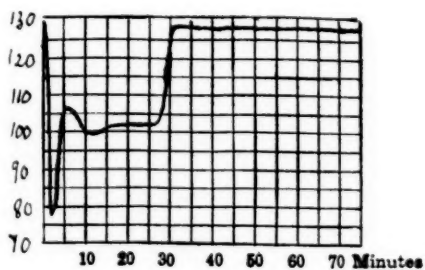
CASE 9.—A. F., male, age 42, height 5' 6¼", weight 120 lbs.; single. Committed April 1920. Catatonic type, far advanced dementia, with mutism, very untidy, cataleptic, with stereotypic manners. Aschner's test: Reduction of 3 beats per minute.

CASE 10.—J. S., male, age 34, height 5' 8", weight 147 lbs.; single. Committed May 1926. Catatonic type with delusions of being poisoned, auditory and visual hallucinations, fixed postures maintained for hours, occasional mutism and refusal to eat. Aschner's test: Reduction of 17 beats per minute.

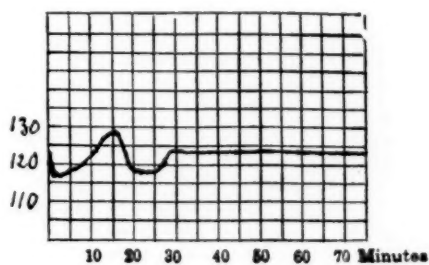
Adrenalin caused two deep depressions in the blood pressure curve.

CASE 11.—L. C., male, age 21, height 5' 10¼", weight 137 lbs.; single. Committed September 1927. Catatonic type with frequent attacks of mutism, stereotypy, impulsiveness, auditory hallucinations, religious delusions.

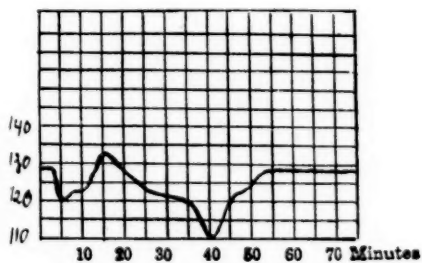
Blood pressure, after adrenalin, dropped three times before returning to the original level.



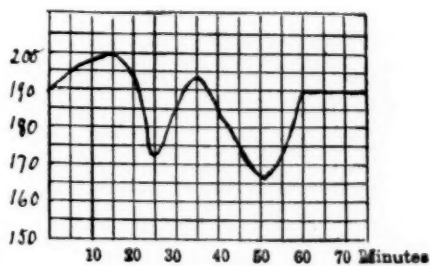
Case 6.



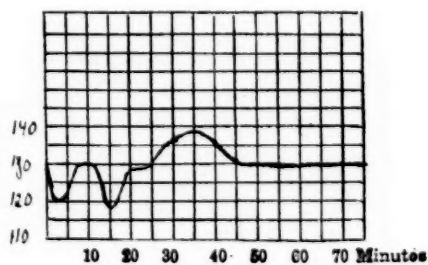
Case 7.



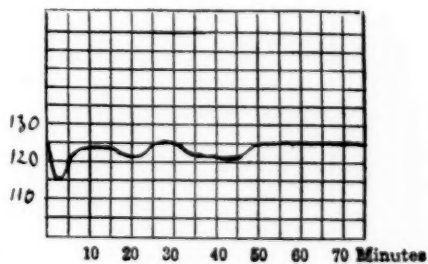
Case 8.



Case 9.



Case 10.



Case 11.

D. FALL OF BLOOD PRESSURE FOLLOWED BY RISE.

CASE 12.—H. E., female, age 26, height 5' 2½", weight 90 lbs.; single. Committed May 1926. Mixed hebephrenic and catatonic type with carelessness of appearance, resistiveness, destructiveness, attempted suicide, attacks on other people, failure to speak and eat at intervals, delusions and hallucinations, seclusiveness and lack of insight.

Injection of adrenalin caused a fall of the blood pressure followed by a rise.

CASE 13.—P. M., age 34, height 5' 11½", weight 191 lbs.; single. Committed November 1916. Catatonic type with catalepsy, *flexibilitas cerea*, untidy, disoriented, does not speak spontaneously, is always "two seconds old."

Maximum blood pressure fall 10 mm., maximum rise 12 mm.

CASE 14.—C. C., male, age 25, height 5' 10", weight 153 lbs.; single. Committed April 1926. Hebephrenic type, disoriented, with many mannerisms, grotesque delusions, hallucinations and complete emotional indifference.

Drop of 5 mm. of the blood pressure was followed by a 10 mm. rise.

CASE 15.—S. L., male, age 40, height 5' 7", weight 137 lbs.; married, 4 children. Catatonic type with fixed postures, rigidity, retardation, occasional mutism, vague delusions of persecution, feeling of electricity, evasiveness and seclusiveness. Aschner's test: Reduction of 8 beats per minute.

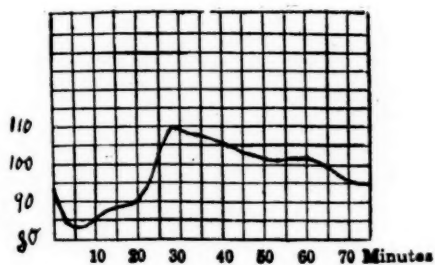
Maximum fall was 10 mm., maximum rise 18 mm.

CASE 16.—N. B., male, age 41, height 5' 6½", weight 138 lbs.; single. Committed April 1914. Paranoid type with delusions of persecution and grandeur. History of homicide. Good retention of general knowledge.

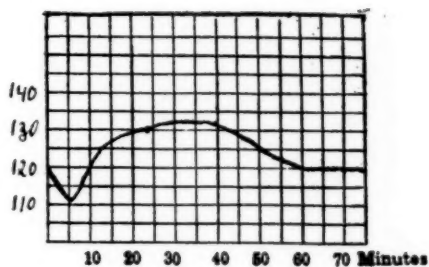
Fall of 10 mm. was followed by a rise of 10 mm. Hg.

CASE 17.—G. M., male, age 20, height 5' 8", weight 150 lbs.; single. Committed December 1926. Hebephrenic type with extreme emotional indifference, vague delusions of persecution, very seclusive, likes to hide, had transitory hallucinations of hearing.

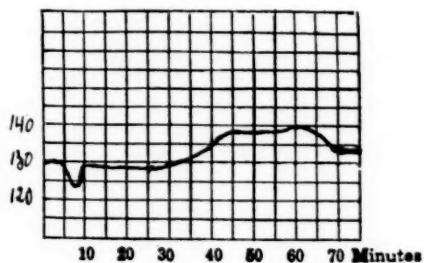
The 16 mm. drop of the blood pressure was followed by a 28 mm. rise.



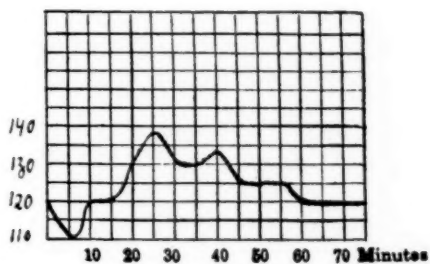
Case 12.



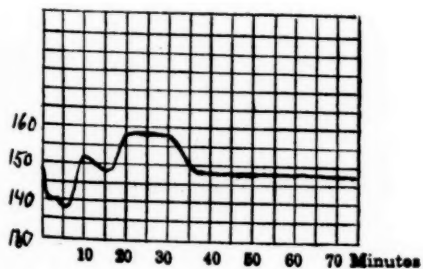
Case 13.



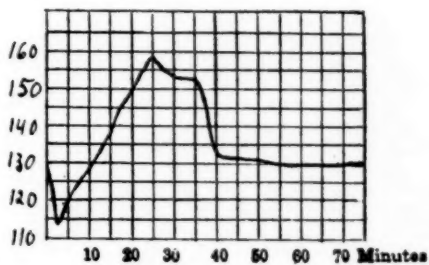
Case 14.



Case 15.



Case 16.



Case 17.

CASE 18.—H. D., male, age 17, height 5' 6", weight 122 lbs.; single. Committed January 1926. Catatonic type with history of attempted suicide, very impulsive, easily excited, very seclusive, destructive, assumes stuporous attitudes for hours, has hallucinations of hearing. Aschner's test: Reduction of 5 beats per minute.

Maximum fall was 6 mm., maximum rise 32 mm.

CASE 19.—R. H., male, age 39, height 5' 8½", weight 136 lbs.; single. Committed January 1923. Hebephrenic type with visual and auditory hallucinations and emotional indifference. Aschner's test: Reduction of 24 beats in summer 1926, of 43 beats per minute in summer 1927.

After taking a very slight drop, the blood pressure went up to 20 mm. above the original level, the maximum rise being reached after 55 minutes.

E. RISE OF BLOOD PRESSURE FOLLOWED BY FALL.

CASE 20.—F. S., male, age 28, height 5' 10¼", weight 155 lbs.; single. Indian. Committed February 1923. Hebephrenic type with auditory, visual and olfactory hallucinations, grotesque delusions, mannerisms, irrelevant and incoherent answers.

Both rise and drop did not exceed 5 mm. each.

CASE 21.—A. K., male, age 33, height 6' 0", weight 138 lbs.; single. Committed October 1912. Catatonic type, very impulsive, with frequent acute attacks of excitement.

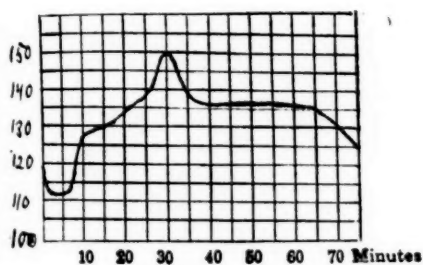
The adrenalin blood pressure curve, obtained in one of these attacks of excitement, showed first a sudden rise of 28 mm., went back to the original level and then sank down to 32 mm. below the starting point which was regained after 75 minutes.

CASE 22.—W. P., male, age 30, height 6' 0", weight 155 lbs.; single. Committed November 1920. Hebephrenic type with constant auditory and visual hallucinations, mannerism, grotesque delusions. Maternal uncle has senile psychosis, presbyophrenic type. Aschner's test: Reduction of 17 beats per minute.

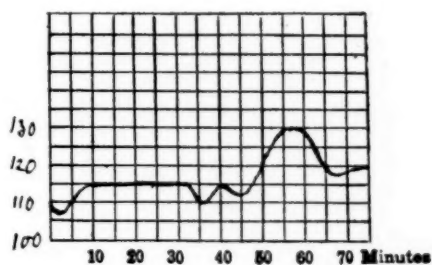
Slight elevation of the blood pressure curve was followed by an equally small reduction.

CASE 23.—J. H., male, age 30, height 5' 10½", weight 149 lbs.; single. Committed January 1925. Catatonic type with mutism, pronounced catalepsy, loss of control over excretions, has to be spoon-fed. Maternal aunt was insane. Aschner's test: Reduction of 40 beats per minute.

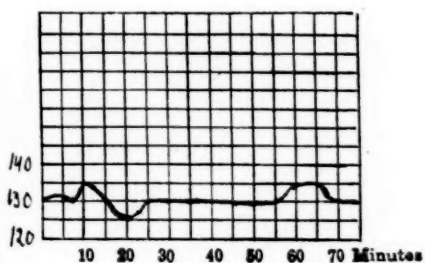
Blood pressure curve showed a slight depression between two small elevations. Another adrenalin curve, taken of the same patient in a condition of acute excitement, was characterized by a sudden rise of 20 mm. Hg. after two minutes.



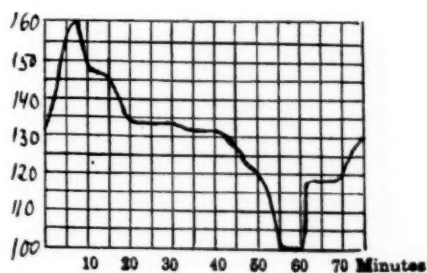
Case 18.



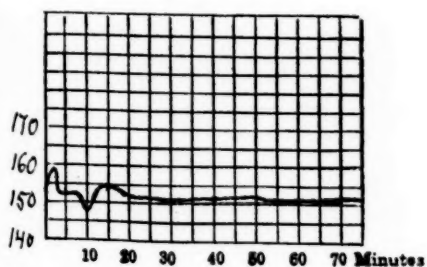
Case 19.



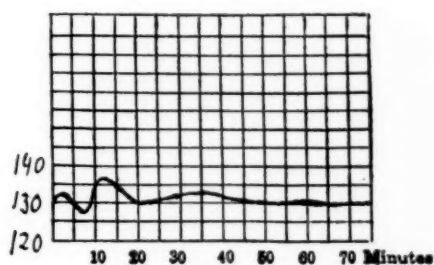
Case 20.



Case 21.



Case 22.



Case 23.

F. VAGOTONIC CURVES WITH NO FALL OF BLOOD PRESSURE.

CASE 24.—M. H., male, age 23, height 5' 7½", weight 122 lbs.; single. Committed January 1925. Paranoid type with unusual insight into his situation, struggling hard against his narcissistic delusions of grandeur (self-identification with Jesus Christ) and of persecution on the part of his father, auditory hallucinations. Maternal aunt was insane, mother highly neurotic.

Noticeable rise of blood pressure did not take place until about 20 minutes after the injection of adrenalin.

CASE 25.—J. W., male, age 48, height 5' 10¼", weight 151 lbs.; single. Committed December 1924. Paranoid type with delusions of persecution, very evasive and seclusive, has auditory hallucinations. Aschner's test: Reduction of 15 beats per minute.

A slight elevation of the blood pressure curve did not occur until more than 20 minutes after the injection of the drug.

CASE 26.—C. P., male, age 26, height 5' 4½", weight 109 lbs.; single. Committed February 1919. One brother insane. Hebephrenic type with hallucinations of sight and hearing (God told him to "punch his eyes out"), occasionally resistive, emotionally indifferent, laughs to himself, has mannerisms.

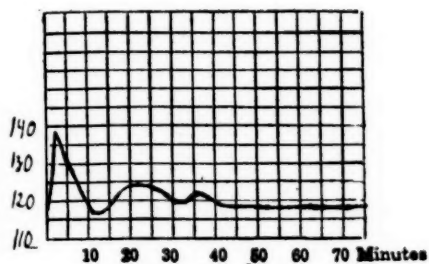
Adrenalin blood pressure curve resembled Dresel's second vagotonic curve.

CASE 27.—E. C., male, age 29, height 5' 6¼", weight 186 lbs.; single. Athletic constitution. Committed June 1927. Paranoid type with auditory hallucinations and delusions of persecution and grandeur. Aschner's test: Reduction of 5 beats per minute.

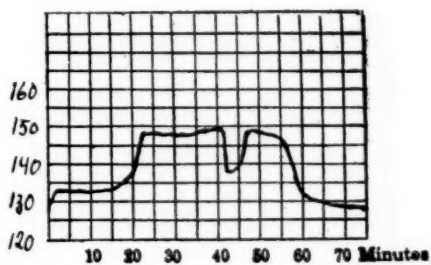
Elevation of blood pressure curve did not exceed 10 mm. Hg.

CASE 28.—F. W., male, age 43, height 5' 9", weight 142 lbs.; single. Committed May 1919. Hebephrenic type, very indifferent, disoriented, almost completely demented. Aschner's test: Reduction of 8 beats per minute.

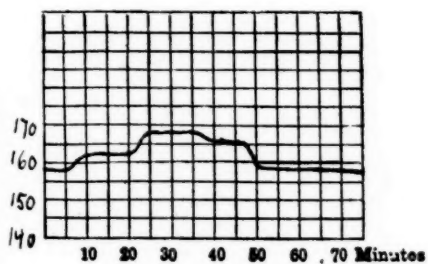
Elevation of blood pressure did not exceed 10 mm.



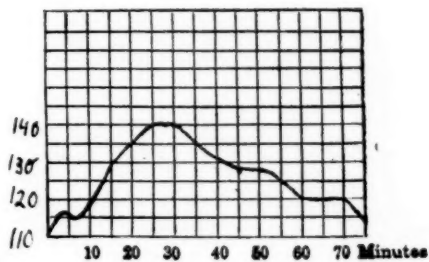
Case 23a.



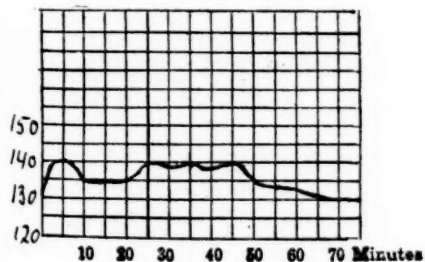
Case 24.



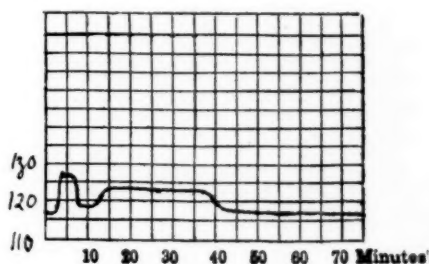
Case 25.



Case 26.



Case 27.



Case 28.

CASE 29.—E. W., male, age 37, height 5' 10½", weight 167 lbs.; married, one child. Mother was insane. Committed June 1921. Hebephrenic type, disoriented, with auditory hallucinations; always says that he is "different." Aschner's test: Reduction of 5 beats per minute.

Adrenalin injection yielded a curve similar to Dresel's second vagotonic curve.

CASE 30.—T. B., male, age 44, height 5' 4", weight 112 lbs.; single. Committed February 1925. Hebephrenic type with grotesque delusions and hallucinations. Maternal aunt was insane. Aschner's test: Reduction of 4 beats per minute.

Very slight elevation of blood pressure immediately after the injection of adrenalin.

CASE 31.—I. F., male, age 21, height 5' 6", weight 95 lbs.; single. Catatonic type with mutism, *flexibilitas cerea*, auditory and visual hallucinations.

Mildly vagotonic adrenalin blood pressure curve.

G. ZIGZAG CURVES.

CASE 32.—T. C., male, age 33, height 5' 8", weight 159 lbs.; single. Hebephrenic type with grotesque delusions, silly laughter, emotional indifference, seclusiveness. Aschner's test: Reduction of 3 beats per minute.

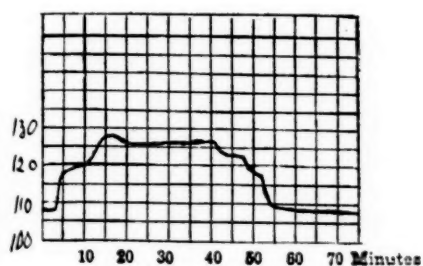
This, and the two following cases, after injection of adrenalin, showed curves which were constantly fluctuating, elevations alternating with depressions, so that they had the appearance of zigzag-lines.

CASE 33.—G. T., male, age 32, height 5' 3", weight 121 lbs.; single. Maternal uncle was insane. Hebephrenic type with resistiveness, changeable delusions and hallucinations, mannerisms. Aschner's test: Reduction of 35 beats per minute.

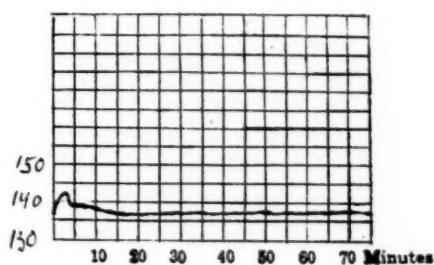
Zigzag curve with four elevations.

CASE 34.—M. D., female, age 34, height 5' 4", weight 111 lbs.; married, two children. Two cousins were insane. Hebephrenic type with hypochondriasis, delusions of persecutions, auditory and visual hallucinations, lack of insight.

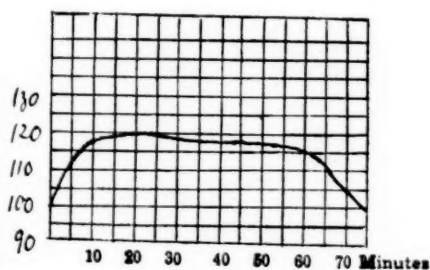
Highest elevation did not exceed 12 mm. Hg. and was followed by a few other, not so high rises.



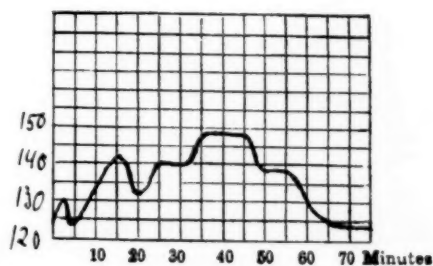
Case 29.



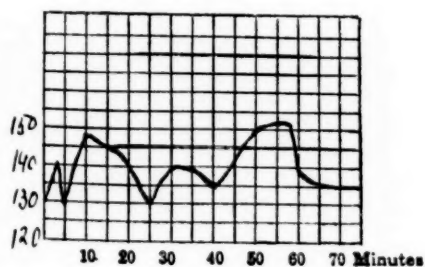
Case 30.



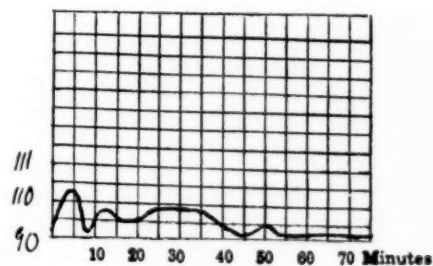
Case 31.



Case 32.



Case 33.



Case 34.

II. CASES OF MANIC-DEPRESSIVE PSYCHOSIS AND ALLIED CONDITIONS.

A. EXCITEMENT AND AGITATION.

CASE 35.—E. R., male, age 41, height 5' 7", weight 120 lbs.; single. Committed May 1926; died August 1926. Paternal aunt feeble-minded. Depressed type with delusions of sinfulness and unworthiness, highly agitated, with morbid fears and strong suicidal tendencies, heard voices accusing him of being a bad man.

The blood pressure, after administration of adrenalin, went up to 70 mm. above the original level to which it returned after more than 90 minutes.

CASE 36.—S. S., male, age 39, height 5' 7½", weight 117 lbs.; married, six children. Committed March 1926, discharged recovered June 1926. Manic type with flight of ideas, divertibility and distractibility, hyperactive with attacks of violence, many variable delusions.

The rise of blood pressure amounted to 54 mm., the curve regained the starting point after sixty-five minutes.

CASE 37.—C. M., male, age 63, height 6' ¾", weight 147 lbs.; married, two children. Committed February 1926, discharged on trial October 1926. A constitutional psychopath with acute attacks resembling very much those of a manic excitement. During these attacks he is very emotional, has religious delusions and both auditory and visual hallucinations, has conditions of ecstasy when he gathers crowds about him preaching to them in terms of fervent exhortation. Has a very good intelligence.

Sympathicotonic curve with a rise of 42 mm. Hg. in the blood pressure.

CASE 38.—L. M., male, age 56, height 5' 5½", weight 140 lbs.; married, five children. Committed nine times, the first time in June 1896. Hypomanic condition, mildly exalted, boisterous, verbose, hyperactive. In the rational intervals he manages to provide for his family sufficiently to keep them out of misery during his psychotic periods.

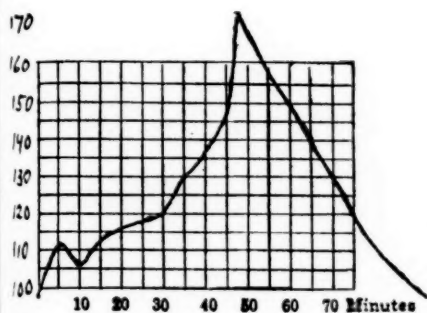
Mildly sympathicotonic curve with two elevations.

CASE 39.—M. W., female, age 26, height 5' 1½", weight 100 lbs.; married, two children. Committed November 1925, discharged on trial December 1926. Originally diagnosed as dementia præcox, afterwards as manic-depressive psychosis, manic phase. Had a nervous breakdown at the age of seventeen, from which she completely recovered. Was very noisy and resistive, quite talkative, destructive to her clothing, was found crying quite frequently. Changeable delusions of persecution and grandeur, no hallucinations. History of insomnia.

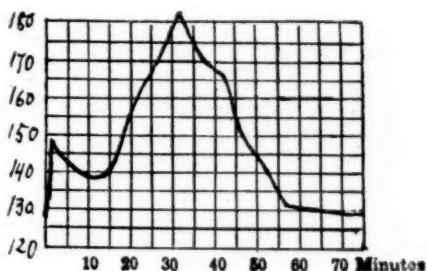
Injection of adrenalin yielded typical sympathicotonic curve.

CASE 40.—T. D., male, age 62, height 5' 4½", weight 116 lbs.; married, seven children. Committed June 1924, discharged recovered August 1924. Depressed type with history of suicidal attempts, with self-accusations, phobias; quite agitated.

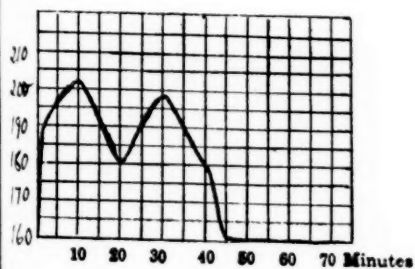
Sympathicotonic adrenalin blood pressure curve.



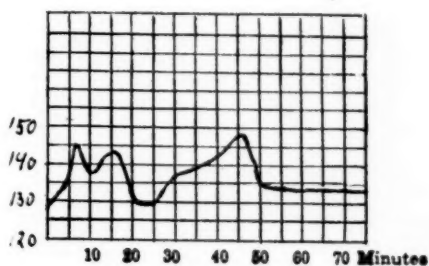
Case 35.



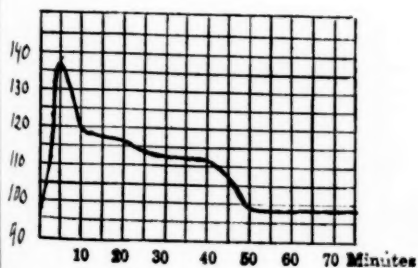
Case 36.



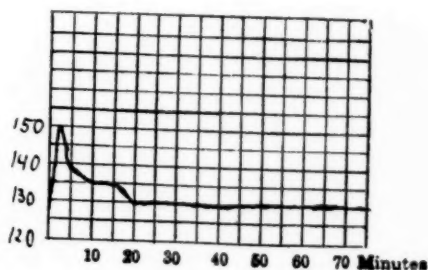
Case 37.



Case 38.



Case 39.



Case 40.

B. STUPOROUS MELANCHOLIA.

CASE 41.—J. R., male, age 40, height 5' 9½", weight 140 lbs.; married, six children. Committed April 1926. Very deeply depressed, in a stuporous condition. Attempted suicide before admission.

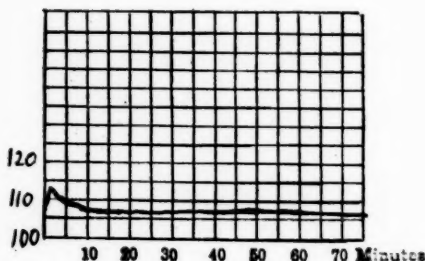
Rise of not more than 4 mm. Hg. after 2 minutes, return to the starting point after 8 minutes.

CASE 42.—C. H., male, age 33, height 5' 2½", weight 128 lbs.; single. Committed December 1924. Pyknic constitution. Stuporous melancholia with a few schizoid admixtures.

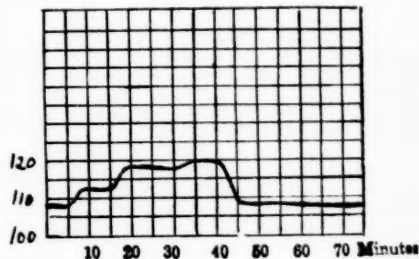
Vagotonic blood pressure curve after administration of adrenalin.

CASE 43.—N. O., male, age 34, height 5' 9", weight 176 lbs.; married, two children. Committed March 1925. Maternal cousin feeble-minded. Stuporous melancholia with schizoid admixtures.

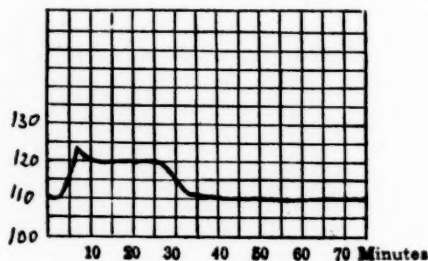
Rise began two minutes after the injection of the drug, amounting to 14 mm. Hg.



Case 41.



Case 42.



Case 43.

SUMMARY.

Of the thirty-four selected cases of dementia præcox, fifteen were of the catatonic, thirteen of the hebephrenic, four of the paranoid, one of the simple and one of the mixed catatonic and hebephrenic type. In order to eliminate the possible effect of physical diseases on the formation of the adrenalin blood pressure curves, only such patients were submitted to the test who, after thorough examination immediately preceding the test, were found to be free from any acute or chronic physical ailments. Patients with an original blood pressure of more than 165 mm. Hg. were also excluded (with one exception: case 9), since Kylin,⁸ examining the adrenalin reaction in (non-psychotic) cases of high blood pressure with Dresel's technique, found that in such individuals the pressure curve differed materially from that in persons with a normal blood pressure. In a number of cases the oculocardiac reflex was tested a few days before the injection of adrenalin, and although in several patients pressure on the eyeballs resulted in a considerable reduction of the pulse rate (13 beats in case 1, 15 in case 25, 17 in cases 10 and 22, 35 in case 33, 40 in case 23, 43 in case 19), a constant regularity or a certain parallelism with the configuration of the adrenalin blood pressure curves could not be noticed. The pulse rate after the injection of the drug was at first registered religiously as often as the blood pressure was taken but it was soon found that, due to its continuous fluctuations it could not very well serve as a means for the evaluation of the condition of the vegetative nervous system in the psychosis. As to the adrenalin glycemia, Gordon, Ostrander and Counsell⁹ recently published a very elucidating paper on the subject, to which the author has nothing to add from his own observations.

The outstanding result of the application of the adrenalin test to the thirty-four cases of dementia præcox was this, that invariably in all individuals examined vagotonic blood pressure curves were obtained. It is true that conditions of excitement in cases 21 and 23 caused at first a sudden rise of the blood pressure, but this was followed soon by a marked drop in case 21, and the other patient who had been submitted to the test once before when he was in a rather stuporous condition yielded a typically vagotonic curve.

The dementia præcox curves could be divided into seven more or less distinct groups. The first group consisting of one case only showed no response whatever, the original blood pressure of 110 mm. remained unaltered. This patient, afterwards, received 2 c. c. of adrenalin, with the effect that the vagus, though hypertonic to a high degree, was not strong enough to counteract the enormous assistance which the sympathicus received and a strongly sympathicotonic curve was the result. The second and third groups show reactions similar to the third vagotonic curve of Dresel, representing a single or double fall of the blood pressure respectively, thus characterizing themselves as being of an extremely vagotonic nature. They were insofar much more outspoken than Dresel's third curve as the fall was not followed by any rise of the blood pressure. In one case, originally diagnosed as manic depressive psychosis, depressed phase, the pressure went down within two minutes to as much as 50 mm. below the original level; later, this patient turned out to be typically catatonic. In the fourth group, comprising eight cases, the initial fall was followed by a more or less pronounced elevation, the highest of which did not exceed 32 mm. Hg. In the four cases of the fifth group, a slight elevation was followed by a depression of the blood pressure curve, again proving the presence of vagus hypertonicity. The eight cases forming the sixth group yielded curves which resembled Dresel's first and second vagotonic curves, showing a delayed and comparatively low elevation. There is finally a seventh group comprising three curves which have the appearance of zigzag-lines and very prettily demonstrate the "tug-of-war" struggle between vagus and sympathicus, with the vagus as winner.

It was naturally more difficult to obtain a large number of acute maniacs or agitated melancholics than cases of dementia præcox for the performance of the test. Only in single cases, it was possible to have the patients cooperate and remain quiet for the approximately sixty minutes required for the adrenalin test. The first group comprised six cases, three were manic, two depressed, and one a constitutional psychopath with manic excitement. A glimpse at the adrenalin blood pressure curves obtained from these patients demonstrate at once their fundamental difference from the dementia præcox curves. They either show sudden elevations occurring within less than ten minutes, or gradual rises which

show a very high peak 50-60 mm. above the starting point. Curve 38, taken of a slightly exalted, hypomanic patient, shows accordingly a mildly sympathicotonic curve (with two rises). The three curves of the second manic-depressive group were taken of patients who presented conditions of stuporous melancholia. Here, again, we see marked vagotonic features of the blood pressure curves, with very slight and markedly delayed elevations.

CONCLUSIONS.

1. All of the thirty-four selected cases of dementia præcox, after injection of 1. c. c. of adrenalin chloride solution 1:1000, yielded typically vagotonic blood pressure curves.

2. The degree of vagotonia, as pictured by the adrenalin blood pressure curves, did not seem to depend upon certain "types" of dementia præcox, but upon the degree of emotional indifference. Conditions of acute excitement formed, in addition to the adrenalin, an aid to the sympathicus.

3. Five cases of either manic excitement or depressive agitation yielded typically sympathicotonic curves.

4. Three cases of stuporous melancholia presented pronounced vagotonic adrenalin blood pressure curves.

5. The adrenalin blood pressure test should, in the author's opinion, be made a routine examination both in cases of dementia præcox and the emotional psychoses, wherever possible.

I wish to thank Dr. Robert L. Fenton for his kind assistance in the selection of cases and application of the test.

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EXPERIMENTAL ASEPTIC MENINGITIS: THERAPEUTIC AND CLINICAL STUDIES.*

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PART I. THERAPEUTIC EFFECT OF ASEPTIC MENINGITIS IN THE TREATMENT OF DEMENTIA PRÆCOX AND OTHER PSYCHOSES.

The use of aseptic meningitis as a therapeutic agent in the treatment of mental disorders is a recent development that has aroused considerable interest. Its use has been extremely limited and has been confined to the treatment of dementia præcox. The reports of the therapeutic results obtained have been based on comparatively short periods of observation and the nature of the physical reaction has not received thorough study. It is the purpose of this paper to report the effect on the mental state of psychotic patients and the physical reaction produced by the development of aseptic meningitis.

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PREVIOUS STUDIES.

Carroll¹ first called attention to the use of aseptic meningitis as a therapeutic agent in the treatment of dementia præcox. His results, although based on a small number of cases and observed only a short period of time, were very encouraging. A later study by Carroll, Barr, Barry and Matzke² on the results obtained by this method in the treatment of a large group of chronic dementia præcox was also encouraging, but again the period of observation after treatment was short. Barr, Barry,³ in a more recent report, reviewed the condition of the patients previously reported and added the results obtained in the treatment of a new group of dementia præcox patients.

The cases originally treated and reported by Carroll were dementia præcox of comparatively short duration. We were particularly interested to determine if anything could be done for the chronic, hopeless, institutionalized type of cases. For obvious reasons only the most hopeless type of cases were at first selected for treatment, but as experience was gained our selections became less limited. More than three years have elapsed since this work was undertaken and as the patients so treated have received no other form of therapy some conclusions concerning the value of this method of treatment may be justified.

MATERIAL STUDIED.

A total of 45 patients were selected for treatment. For purposes of study these may conveniently be divided into two groups, A and B. Group A is composed of 23 patients, all dementia præcox of the hopelessly chronic type who had been institutional residents for periods of 2 to 11 years. All were backward patients, some defilers, some violent and destructive, others silly and noisy, some were extremely apathetic, having sunk to a vegetative type of existence. All were constant cares, unable to assist in any useful activity and all attempts to improve their condition by occupational or recreational therapy had failed. This group, subclassified, contained 2 of the simple, 4 of the paranoid, 8 of the catatonic and 9 of the hebephrenic types.

Group B contained 22 patients whose psychoses were of shorter duration, from 4 months to 2 years, 13 of these patients were

dementia præcox, 3 of the paranoid, 2 of the hebephrenic and 8 of the catatonic types. The psychoses of the remaining 9 patients were as follows: 2 cases of manic depressive, 2 cases of involutional melancholia, 2 cases of psychoses with somatic disease, and 3 cases of psychoneurosis. These patients were also backward residents who had not only failed to show improvement but whose psychotic immersion seemed to be steadily deepening.

PRODUCTION OF ASEPTIC MENINGITIS.

Treatment was preceded in each case by blood examination, leucocyte and differential counts, blood and spinal fluid Wassermann, the colloidal gold reaction, globulin, cell count and pressure of the spinal fluid determined and found to be normal in all but one case.

Aseptic meningitis was produced by the intraspinal injection of inactivated normal horse serum. The patients received a saline cathartic on the day preceding the injection and were given no breakfast on the morning of the treatment. Temperature was also watched and no injection was given where febrile reaction remained. Spinal puncture was done, 24 c. c. of spinal fluid was removed and 20 c. c. of the inactivated serum was replaced intraspinally. Injections were at first made at weekly intervals, the drained spinal fluid was examined for cell count and globulin estimation immediately after the injection. The development of several very severe reactions, one of which resulted in our only fatality, taught us that some index to the patient's condition, more reliable than the temperature, must be found and used as a guide in this treatment. Spinal fluid in various cases taken before the second or third injections showed a great variation in cell count. A fairly constant relationship was found to exist between the severity of the reaction and the cell count of the spinal fluid before the injection. In all later treatment a microscope was kept in the operating room and the spinal fluid cell count was done before any serum was injected. If the cell count was below 100, 25 c. c. of serum was injected; if below 200, 20 c. c. was given; if the cell count was between 200 and 350, 15 to 5 c. c. was considered sufficient. When the cell count was found to be above 350, as occasionally happened, no injection was given until the cell count had dropped to or below 200.

CLINICAL REACTIONS AND COMPLICATIONS.

The physical reactions following injections were fairly constant but showed a marked variation in intensity and persistence. Temperature usually dropped to subnormal soon after the injection, occasionally below 97 for one or two hours, mild shock reactions were not uncommon during this period, pulse feeble and rapid and the extremities cold. External heat was usually sufficient to meet this period of circulatory depression, occasionally caffeine sodium benzoate or adrenalin was necessary. Two or three hours after injection the pulse rate accelerates, febrile reaction develops with corresponding respiratory increase. Severe and persistent vomiting, pains in the head, neck and back almost invariably developed. The reaction reached the height of its severity about six or eight hours after injection, remained stationary for one to three hours, then slowly subsided. The temperature usually rose to 102 or 103, but in a few instances mounted to 105. The headache, and less frequently the pains in the back, persisted for two or three days.

In a number of cases the febrile reaction, headache and vomiting was quickly followed by increasing drowsiness, the respirations became slow and labored, the pulse rate quickly dropped from 110 or 120 to 80, 60, 50 and as low as 40, the heart action became irregular, and the drowsiness deepened to a stupor. In these cases relief of the increased intracranial pressure was effected by cisternal puncture and slow drainage. The fluid was invariably turbid and under greatly increased pressure, as high as 40 mm. Hg. Removal of from 30 to 60 c. c. usually reduced the intracranial pressure to normal and as the pressure was reduced the above symptoms rapidly disappeared. One such drainage was usually all that was required but occasionally such relief measures had to be repeated two or even three times. After it was learned how effectively the severity of the reaction could be modified by such drainage, and because of the one fatality early in our work, we were not inclined to take unnecessary risks and therefore probably interfered far oftener than was absolutely necessary.

On the second day of the reaction the febrile reaction declined, the intensity of the headaches diminished, the patients were able to sit up and take food, by the third or fourth day they were usually up and walking about.

THERAPEUTIC EFFECT IMMEDIATE.

The immediate effect on the mental state of these patients was extremely interesting. The first injection was almost always followed by a very mild reaction and seldom produced any change in the patient's state. During the reaction of the second and following injections, which were severe, a remarkable change almost invariably occurred. Self-concern was the most constant and strongest manifestation. The pain was undoubtedly severe and formed a stimuli that seldom failed to pass the threshold of even deeply clouded consciousness. Fear of death was a common expression and it seemed as if this threat appealed to the instinct of self-preservation with sufficient strength to produce at least a partial and temporary synthesis of the dissociated personality. They became observant, complained of their pains, asked for water, spoke relevantly, often asked if they were going to die, expressed the fear that they would die, or asked if they would get well. One patient who had been mute for four years spoke freely of her home life and told of the delusions that produced her mutism, others carried on relevant speech for the first time in years. This mental clarity was most pronounced during the period of meningitic reaction, and unfortunately, was not permanent, a relapse, complete or partial, was the usual occurrence, however some degree of improvement persisted in the majority of cases. Many of the most deteriorated cases showed great fear of further treatments and in these cases the improved co-operation and behavior was probably largely due to fear reaction. Others showed no fear of continued treatment, in fact several said that they wanted more treatment, that while the pain was bad their minds had been made much clearer.

We were greatly encouraged by the results obtained in the first four patients selected for treatment.

CASE No. 23.—A white male, single, had previously been a clerk. Psychosis of six years' duration was characterized by progressive defects of interest, seclusiveness, carelessness of personal appearance, apathy and peculiar behavior. Rapid deterioration occurred and for three years before treatment was started patient had been untidy, extremely apathetic, had to be fed, dressed and moved around, had apparently lost all contact with reality. On January 26, 1924, the first injection of 20 c. c. was given and was followed by a moderate reaction. Patient was up on the third day, wandered about the ward, was more observant. On the fifth day he dressed himself, the first

time in years. On the sixth day he went to the dining-room alone and fed himself. He was still slovenly and apathetic. On February 5 a second injection of 20 c. c. was given and followed by a more severe reaction during which patient spoke freely for the first time since admission. He became alert and observant, was up on the third day outside where he watched games with apparent interest and enjoyment. While he showed a great increase in interest and activity he frequently relapsed into periods of his former listlessness and apathy. On February 13 a third injection of 20 c. c. was given. This produced a very severe reaction. Patient was quiet and for the first time concerned about himself, seemed to appreciate his condition, spoke of his former home life and interests and said that the "loggy feeling" seemed to be leaving his head. Following recovery from this injection he attended picture shows, enjoyed music and even played the violin, the first time for seven years. He wrote home and became steadily more neat of person and careful of his possessions. March 8 a fourth injection of 8 c. c. was given. A severe reaction was produced and improvement slowly progressed.

Very definite change was apparent in the above case within two weeks after beginning treatment. The improvement was slow but steady and for a time we hoped for a complete recovery, however the stage of satisfactory adjustment to outside life was not reached.

The results in the following case, also one of our first group, was even more encouraging.

CASE No. 44.—A white male, 22 years of age, a catatonic præcox, noisy and disturbed when admitted to hospital some two years previously. Since the time of admission patient had shown steady deterioration and for a year had been in a vegetative state, oblivious to his surroundings, no personal interest, defiled, had to be dressed, fed and led about. On January 28, 1924, the first injection of 20 c. c. was given which produced an unusually severe initial reaction. During this reaction period he asked questions about himself and his condition, his first relevant speech and manifestation of interest in many months. He was up on the third day, continued to initiate conversation, showed increasing interest and observation. On the fifth day he dressed and fed himself and read the papers, for the first time since admission. He became neat, wrote a letter home and asked for further treatment, saying that whatever we had given him had made his head feel entirely different. A second injection was given, also 20 c. c., on February 4 with a very severe reaction. The previous improvement was maintained and progressed rapidly. He was again up on the third day, after which he quickly took a voluntary and active interest in ward work and recreation. Physical state also showed improvement; he enjoyed and respected parole, went to town alone and made judicious purchases and became a valuable helper about the hospital. He soon expressed a desire to return home and was paroled on March 4, 1924. He made an excellent adjustment for a year when, following a period of alcoholic indulgence and venereal infection, peculiarities of

behavior were shown and he was returned to the hospital March 30, 1925. He is still at the hospital, has received no further treatment and is leading a contented and apparently happy institutional life.

CASE No. 18.—One of the first group of four selected for treatment, a white male, age 26, who had been at the hospital only seven months. On admission he was in good physical condition, neat, quiet and orderly but deeply confused and disoriented. He was at first diagnosed catatonic *præcox* but later study resulted in revision to psychosis with somatic disease. Patient showed a very rapid decline, physically and mentally, had to be led about, dressed and fed, would not speak and seemed oblivious to his surroundings, later defiled, became stuporous and emaciated and, as the prognosis seemed hopeless, was selected for treatment. On January 27, 1924, an injection of 20 c. c. was given and although only a moderate reaction followed patient aroused from his stuporous state within 24 hours; the following day a surprising degree of alertness was shown, became observant and asked about his condition. On the fourth day he was up, dressed and fed himself and tried to assist with ward duties. He was still very weak, but he too asked if he could not receive further treatment as what he had received had made his head feel "clearer." A second 20 c. c. injection was given on February 3 which produced a very severe reaction. Patient was dull and listless for the following two days, then showed rapid improvement and he gave a most interesting account of his stuporous state. When asked if he remembered his condition before treatment he smiled and replied, "I remember, in a way, but it's almost like a dream. I think I was half dead and I felt as if I was separated from the world. I wanted to talk and ask you to help me but I couldn't, my head seemed dead. It was terrible." He was up on the fifth day, still weak but thereafter rapidly gained in strength and weight, the range of his interests and activities rapidly increased, he wrote excellent letters home, was a dependable assistant and within a week was as neat in personal appearance as the average normal. No further treatment was given as the results could not have been more satisfactory, within a month patient was again strong and robust, cheerful, active and eager to resume his home life. He was paroled March 23, 1924, and since that time has made an excellent adjustment.

The excellent results obtained in our first group were extremely encouraging, however, many of our later cases, in fact, most of them, failed to respond so satisfactorily. Persistent treatment, as many as eight injections, failed to produce any true improvement in a larger number of cases. An example of this type is Case No. 32, a white female, age 31, a hospital resident for 11 years, a typical deteriorated hebephrenic *præcox*. For years this patient had been restless, silly, reacted noisily to hallucinations and delusions, defiled, and was a constant care. The first injection, 20 c. c.,

given March 12, 1924, produced the usual mild reaction and no change. The second injection on March 20, also 20 c. c., gave a strong reaction during which patient was quiet, complained of her pains. She was up on the fourth day, was quieter and neater than she had been for years, but within 10 days had completely relapsed. A third injection of 20 c. c. was given on April 10, again produced a strong reaction which had but little effect on her behavior. A fourth injection given on April 20 was equally ineffective.

While little had been hoped for in a case of such long duration and advanced deterioration several other cases of comparatively short duration, which we expected to respond quickly, showed an equal lack of improvement, as Case No. 11 illustrates. This patient, a white female, age 18, was a typical catatonic præcox of six months' duration, extremely negativistic, resistive, mute, untidy and hallucinated. Nine injections, several of which were followed by very severe reactions, failed to produce any modification of the mental state except for the short periods during and immediately following the reactions, during which periods she showed the usual personal concern, spoke freely and seemed free from hallucinations. It is true that patient became more neat, co-operated better, but this was apparently due to the fear of further treatment than to any true mental improvement.

THERAPEUTIC EFFECT, FINAL

In studying the results of our cases the effects produced by this treatment have been considered in the light of (a) immediate results, based on the condition of the patient during a period of from six to nine months after the institution of treatment and (b) final results, based on the condition of patients observed over a period of approximately three years. We have used the terms Good, Fair and Poor. Good indicating a very definite improvement manifested by increased interests, personal, occupational and recreational, loss or great diminution of hallucinations and delusions; in short, a very satisfactory institutional or social adjustment. Fair indicates a similar type of change but to a less complete and permanent degree. Poor indicates no change other than that which might be considered due to fear reaction or resulting from the change in environment during the course of treatment.

GROUP A. CHART I.

Dementia præcox	Type	Duration	Age	Sex	Number of injections	Immediate results	Finals results
Case No. 23	Simple	5 years	29	Male	4	Good	Fair
" " 24	"	9 "	32	Male	4	Fair	Poor
" " 25	Hebephrenic	3½	20	Female	4	Fair	Poor
" " 26	"	10 "	30	Male	6	Fair	Fair
" " 27	"	4½	24	Female	6	Good	Poor
" " 28	"	5 "	25	Male	5	Good	Poor
" " 29	"	2 "	30	Female	2	Fair	Poor
" " 30	"	7 "	26	Female	7	Poor	Poor
" " 31	"	11 "	31	Female	4	Poor	Poor
" " 32	"	4 "	25	Female	5	Good	Poor
" " 33	"	4 "	25	Female	8	Poor	Poor
" " 34	"	3 "	28	Female			
" " 31	Paranoid	3½	27	Female	7	Fair	Poor
" " 35	"	4 "	27	Male	2	Fair	Fair
" " 36	"	10½	35	Male	5	Poor	Poor
" " 37	"	4 "	31	Male	5	Fair	Poor
" " 38	Catatonic	7 "	33	Male	4	Fair	Poor
" " 39	"	4 "	20	Female	5	Fair	Poor
" " 40	"	2½	25	Male	3	Fair	Poor *
" " 41	"	2 "	20	Female	4	Poor	Poor
" " 42	"	6 "	26	Female	8	Fair	Fair
" " 43	"	9 "	39	Male	4	Good	Good
" " 44	"	5 "	22	Male	3	Good	Good
" " 45	"	7 "	26	Male	3	Fair	Poor
Totals							2 Good 4 Fair 16 Poor 1 Died
							6 Good 12 Fair 5 Poor
							12 Males 11 Females

* Died during treatment.

GROUP B. CHART 2.

Dementia praecox	Type	Duration	Age	Sex	Number of injections	Immediate results	Final results
Case No. 1	Paranoid	18 months	24	Female	6	Poor	Poor
" " 2	"	11 months	24	Male	4	Good	Fair
" " 3	"	10 months	23	Male	3	Good	Good
" " 4	Hebephrenic	9 months	43	Female	6	Good	Poor
" " 5	"	18 months	29	Female	2	Good	Good
" " 6	Catatonic	6 months	35	Male	4	Poor	Poor
" " 7	"	8 months	18	Female	4	Poor	Poor
" " 8	"	12 months	37	Female	5	Good	Poor
" " 9	"	6 months	36	Male	4	Good	Fair
" " 10	"	3 months	31	Female	6	Good	Good
" " 11	"	6 months	18	Female	9	Fair	Poor
" " 12	"	18 months	27	Female	5	Poor	Poor
" " 13	"	4 months	25	Male	5	Good	Good
Psycho- neurosis							
Case No. 14	Hysterical	9 months	48	Female	3	Poor	Poor
" " 15	Psychasthenic	18 months	26	Female	5	Fair	Poor
" " 16	"	12 months	34	Male	8	Fair	Poor
Psychosis with Somatic disease							
Case No. 17	G. I. disease	12 months	15	Male	2	Good	Good
" " 18	Meningitis	9 months	24	Male	2	Good	Good
Manic depressive							
Case No. 19	Manic	12 months	33	Female	2	Good	Fair
" " 20	Manic (3d adm.)	8 months	56	Female	2	Good	Fair
Involutional melancholia							
Case No. 21		15 months	44	Female	7	Fair	Fair
" " 22		24 months	56	Male	2	Good	Good
Totals				9 Males 13 Females		13 Good 4 Fair 5 Poor	7 Good 5 Fair 10 Poor

Group A contains 23 cases, 12 male, 11 female, all dementia præcox, ranging from 2 to 11 years in duration, average duration six years. The immediate results in this group show Good improvement in 6 cases, Fair in 12, and Poor, or no improvement in 5 cases. The final results show only 2 cases of Good improvement, 4 cases Fair, 16 of Poor and 1 fatality. This fatality is classed as Fair in the immediate results because definite improvement had been shown during the month of treatment that preceded death. These figures are self-explanatory. While more than 75 per cent of these cases show improvement for a time relapse gradually occurred in the majority of cases and the improvement has been maintained in only 25 per cent of the cases.

Group B contains 22 cases of from three months' to two years' duration, 9 male and 13 female. Of the immediate results in the dementia præcox group, 8 were Good, 1 was Fair, and 4 were Poor. Final results show a change to 4 Good, 2 Fair, and 7 Poor. Of the 3 cases of psychoneurosis 2 are classed as Fair and 1 Poor in the immediate results, while the final results were all Poor. Both cases of psychosis with somatic disease showed Good immediate results which has been maintained. Both cases of manic-depressive psychosis showed Good immediate results with Fair final results. Of the two cases of involutional melancholy the immediate results were 1 Good and 1 Fair with final results the same. It will be seen that for both immediate and final results Group B was far more satisfactory than Group A.

PART II. PHYSICAL REACTION PRODUCED BY THE DEVELOPMENT OF ASEPTIC MENINGITIS.

PREVIOUS STUDIES.

The spinal fluid has been the subject of much study during recent years. Szecsi,⁴ in 1912, found that irritants such as saline produced an increase in the cellular content of the spinal fluid. Wertheimer and Soupalt and G. Boulanger have observed aseptic meningitic reactions following the injection of intraspinal anæsthesia.⁵ Ayer,⁶ in his study of aseptic meningitis produced in cats, found a very high increase in the spinal fluid cell count while post-mortem study showed, during the acute stage of the reaction, a definite exudate composed almost entirely of polymorphonuclear leucocytes univer-

sally distributed throughout the sub-arachnoid space. Young and Alpers⁷ have recently studied the reactions produced by the intraventricular, intracisternal and intraspinal injections of Swift-Ellis serum and found, by examination of fluid at 1-, 2- and 7-day intervals, that mild aseptic meningitic reactions were produced, however the fluid examined on the various days was not taken from the same patient and because of the great individual variation in the strength and persistence of reactions their findings give only relative information. Carroll, Barr, Barry and Matzke⁸ also studied the spinal fluid reaction in their work, but did so a week after the injections, at which time, as will be shown, the reaction has practically subsided. In none of the above studies has any thorough or correlated investigation of the systemic blood reaction been made.

METHOD OF INVESTIGATION.

The physical reaction may be considered in the nature of (a) a systemic reaction, manifested by the febrile reaction and the alteration of the leucocyte content of the blood, and (b), a local reaction, the severity of which is indicated by the severity and persistence of the meningitic reaction. The systemic reaction was studied by comparison of the leucocyte and differential counts before and after the injections of horse serum. Leucocyte and differential counts were first made at 12-hour intervals after the time of injection until it was found that the blood reactions usually reached the highest point about 24 hours after the injection, leucocyte and differential counts were then routinely made just previous to and repeated 24 hours after injections. The local or meningitic reactions were studied by means of comparison of the cell count of the spinal fluid before injection and the alteration later found. In six cases the spinal fluid examination was repeated at daily intervals, on the same patients, for seven consecutive days, giving an accurate picture of the development, persistence and subsidence of the meningitic curves. In these patients leucocyte and differential counts were also obtained at the same time of spinal fluid examination, showing the correlation between the systemic and meningitic reactions. The withdrawal and study of spinal fluid during many of the more severe reactions also proved a source of valuable information.

SYSTEMIC (BLOOD) REACTION.

The systemic reaction is shown by the following table of leucocyte and differential counts made just before and 24 hours after injections:

Case No. 26*	First injection		Second injection		Third injection	
	Before	After	Before	After	Before	After
Date	4/9	4/10	4/16	4/17	4/30	5/1
Leucocytes	9,600	15,000	8,400	20,000	8,600	23,000
Polys	63%	74%	60%	80%	58%	52%
L. Lymphs	11%	4%	6%	4%	10%	2%
S. Lymphs	18%	12%	18%	8%	28%	9%
Transit	5%	10%	14%	8%	4%	7%
Eosino	3%	...	2%	...	...	...

Case No. 28	First injection		Second injection		Third injection	
	Before	After	Before	After	Before	After
Date	4/9	4/10	4/16	4/17	4/30	5/1
Leucocytes	8,200	17,000	8,600	23,000	9,200	22,000
Polys	60%	75%	54%	76%	54%	86%
L. Lymphs	5%	5%	4%	6%	4%	2%
S. Lymphs	24%	12%	30%	10%	34%	6%
Transit	2%	7%	12%	8%	8%	4%
Eosino	7%	1%	...	...	...	2%

The two patients from whose records the above tables were taken were in good physical condition before treatment was started. It is seen that a definite leucocytosis was the response to the protein stimulation with an appreciable increase in the production of polymorphonuclears. This was the usual type of reaction, in some patients the leucocytosis was smaller, in a few, higher.

The tables below show the blood reaction of two patients whose physical condition before treatment was extremely poor, they were very thin, almost emaciated, anemic and had shown no improvement as a result of the usual tonics and special dietary measures.

Case No. 18	First injection		Second injection	
	Before	After	Before	After
Date	1/26	1/27	2/4	2/5
Leucocytes	4,500	13,000	12,400	15,400
Polys	56%	69%	67%	74%
L. Lymphs	11%	4%	10%	4%
S. Lymphs	33%	20%	11%	10%
Transit .....	...	6%	7%	12%
Eosino .....	...	1%	5%	2%

Case No. 43	First injection		Second injection		Third injection	
	Before	After	Before	After	Before	After
Date	3/18	3/19	3/25	3/26	4/15	4/16
Leucocytes	7,600	8,800	6,400	12,200	4,000	6,800
Polys	78%	57%	64%	68%	52%	78%
L. Lymphs	6%	12%	12%	6%	8%	4%
S. Lymphs	12%	22%	12%	6%	24%	6%
Transit	4%	6%	10%	20%	12%	12%
Eosino .....	...	2%	2%	...	4%	...

The comparatively low reactions shown by these patients was undoubtedly due to their poor physical state and lowered resistance. It is interesting to note that both of these patients, following treatment, showed a slow but progressive physical improvement, gained in weight and strength and the physical improvement has been permanent. Beneficial physical changes resulted in many similar cases.

The reaction shown by the following case is instructive:

This patient was a woman, 58 years of age, large and well developed at time of admission but showed evidence of cardiac weakness. She had remained in an extreme manic state for months, her physical condition showed progressive and rapid decline and prognosis was considered bad so intraspinal therapy was given a trial.

Case No. 20	First injection		Second injection	
	Before	After	Before	After
Date	6/23	6/24	7/3	7/4
Leucocytes	9,900	8,400	8,900	8,200
Polys	60%	80%	70%	79%
L. Lymphs	1%	2%	...	3%
S. Lymphs	19%	14%	29%	15%
Transit	10%	4%	1%	3%
Eosino .....	...	...	...	...

After the second injection this patient became quiet, tidy and increasingly relevant, however she not only failed to show physical improvement but grew weaker and died about six weeks after treatment. It will be noted that in this case both injections resulted in a slight decrease in the leucocyte count and it would seem that the burden produced by the foreign protein injection proved, because of the lowered resistance, a weakening rather than a stimulating agent, and we would be extremely cautious in continuing treatment with a patient who failed to show some degree of increased leucocytosis after the injection.

The following case showed one of the highest degrees of leucocytosis in our series. The reactions were all severe but no com-

plications necessitating removal of spinal fluid developed so we have no exact knowledge of the strength of the local reaction.

Case No. 37	1st injection		2nd injection		3rd injection		4th injection	
	Before	After	Before	After	Before	After	Before	After
Leucocytes ..	11,200	16,600	8,000	24,000	12,000	26,800	12,000	34,000
Polys	69%	74%	64%	84%	50%	92%	70%	78%
L. Lymphs ..	10%	4%	8%	2%	8%	2%	9%	4%
S. Lymphs ..	13%	10%	20%	8%	32%	2%	15%	6%
Transit	8%	12%	8%	4%	10%	4%	3%	12%
Eosino .....	...	...	...	2%	...	...	3%	...

MENINGITIC REACTION.

It is evident from the above chart that a very definite stimulation of the body defensive mechanism is produced by the serum, but the systemic reaction is mild in comparison to the local reaction. By local reaction we mean the inflammatory reaction within the central nervous system, the hyperemia and out-pouring of leucocytes as estimated by the cell count of the spinal fluid. In order to determine exactly the strength and persistence of this reaction and its relation to the systemic reaction, spinal fluid examinations and white differential blood counts were made at 24-hour intervals after the first injection of 20 c. c. of serum for a period of seven days on four patients. The amount of spinal fluid removed was only sufficient for cell count and differential examination so that its influence in producing modification of the reaction was negligible. The following tables show the leucocyte count of the blood and the spinal fluid cell count just before an injection of 20 c. c. normal horse serum was given, and the leucocyte and spinal cell counts taken at 24-hour intervals for seven successive days. The differential counts are not tabulated but the white cells of the blood showed a polymorphonuclear increase similar to that formerly recorded in detail. The spinal fluid showed a very high polymorphonuclear content, as high as 98 per cent, when the reaction was at its height with daily gradual decline of the polymorphonuclear content accompanied by a corresponding increase in mononuclears.

TABLE I

Case No. 24. First Injection.

	7/10/24	7/11	7/12	7/13	7/14	7/15	7/16
W. B. C.....	10,500	17,300	11,200	10,700	9,600	8,700	8,000
S. F. C.....	2	210	260	190	160	110	80

Case No. 45. First Injection.

W. B. C.....	8,400	11,200	12,300	16,500	16,300	14,000	8,600
S. F. C.....	2	770	1,250	740	520	310	180

Case No. 42. First Injection.

	2/26/24	2/27	2/28	2/29	3/1	3/2	3/3
W. B. C.....	6,400	12,200	12,000	11,200	10,900	10,600	9,000
S. F. C.....	3	5,500	540	320	110	106	80

Case No. 27. First Injection.

W. B. C.....	8,000	16,000	16,400	14,000	10,400	11,200	14,000
S. F. C.....	2	3,600	680	410	165	185	230

Several interesting observations are apparent from a study of these tables. It will be seen that there is a wide variation in the strength of the reactions, more marked in the spinal fluid than in the blood, and that there exists only a relative relationship between the strength of the local and systemic reactions. Case No. 24, showing a leucocyte count of over 17,000 had a spinal cell count of only 210, while Case No. 42, with a leucocyte count of 12,200, showed the high spinal cell count of 5500. This variation is probably due to differences in the physical states of the patients, as that of Case No. 24 was excellent, while that of Case No. 42 was comparatively poor. Ayer,⁴ in his work on aseptic meningitis in cats, stated that the reaction usually reached its height about eight hours after injection, then subsided. While this seemed clinically to be the usual course, Cases No. 24 and 45 both showed a higher degree of reaction at 48 than at 24 hours.

Two other cases were similarly studied during the week of their second injections with the results shown below.

CORRELATION BETWEEN BLOOD AND MENINGITIC REACTIONS FOLLOWING FIRST INJECTIONS
 ————— Blood Leucocyte Count. - - - - Spinal Fluid Cell Count.

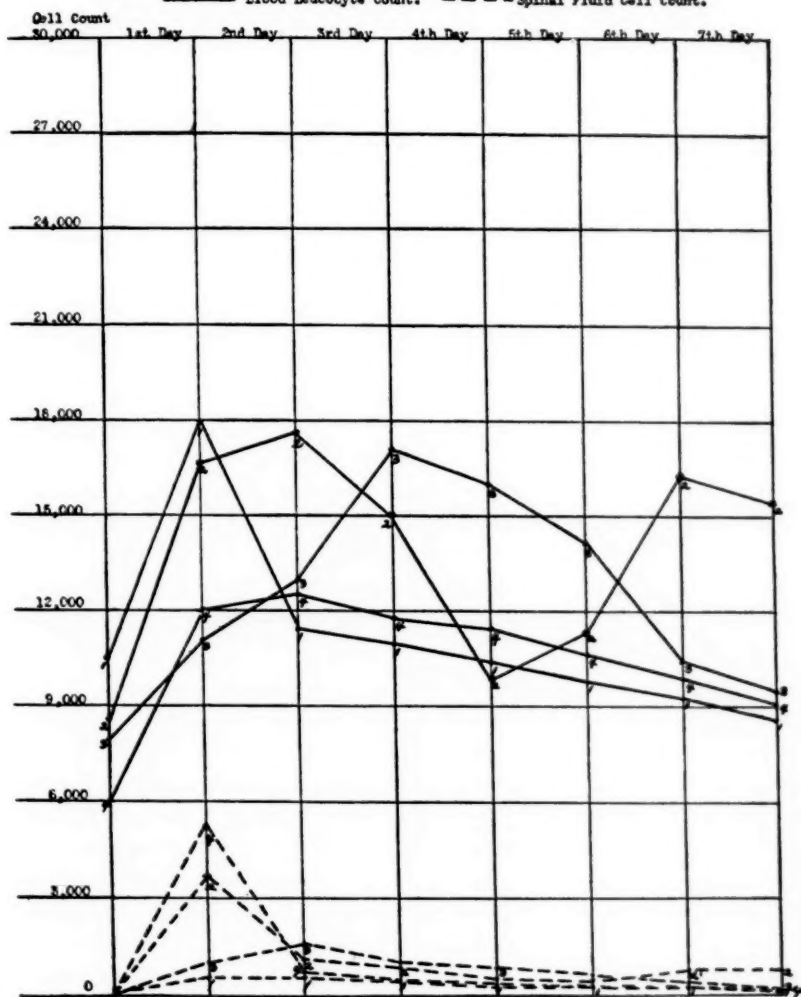


TABLE II

Case No. 30. Second Injection.

	on 3/20/24	3/21	3/22	3/23	3/24	3/25
W. B. Count.....	9,600	27,000	23,000	18,000	15,000	12,000
S. F. Count.....	340	4,400	12,500	700	360	110

Case No. 32. Second Injection.

	on 3/20/24	3/21	3/22	3/24	3/26
W. B. Count.....	10,200	23,400	20,000	12,400	11,200
S. F. Count.....	220	5,000	1,100	500	310

The increased severity here shown over the first reaction, both local and systemic, corresponds well with the clinical picture. Here too, Case No. 30 showed a greater local reaction at 48 hours than at 24 hours, and the persistence of the reactions, both local and systemic, is clearly shown.

The development of complications, respiratory and cardiac embarrassment, which we relieved by drainage, gave further opportunity to study the reaction, as shown in the spinal fluid. Case No. 4 had a spinal fluid cell count of 210 seven days after her second injection, 15 c. c. of serum was injected at 10 a. m. on February 20, 1924. The early distress here shown was probably exaggerated as this patient was extremely emotional. The spinal fluid at 1 p. m. or three hours after injection showed a cell count of only 230. Fifteen c. c. were removed at this time. At 12 p. m., 14 hours after injection, the pressure had risen to 32 mm. Hg., the cell count increased to 5600 and 35 c. c. were removed. At 11 a. m., on February 21, 25 hours after injection, the pressure was 34 mm. Hg., the cell count 7600, and 45 c. c. were removed. At 7 p. m. on the same day, the pressure was again 34 mm. Hg., the cell count had dropped to 6000 and 40 c. c. were removed. On February 22, 48 hours after the injection, the cell count had dropped to 1400, the pressure was down to 24 mm. Hg., 20 c. c. were removed, and from that time patient quickly recovered. The reaction in this case would probably have been much more severe had not repeated drainage been done. No other case showed such persistent severity, one drainage was usually sufficient to relieve embarrassment, but in several cases pressure symptoms recurred and 2 or 3 drainages were done. The following table shows the cases in which relief was considered advisable, the cellular content and pressure of the spinal fluid when drainage was started and the amount of fluid withdrawn in order to reduce pressure to normal.

CORRELATION BETWEEN BLOOD AND MENINGITIC REACTIONS FOLLOWING SECOND INJECTIONS

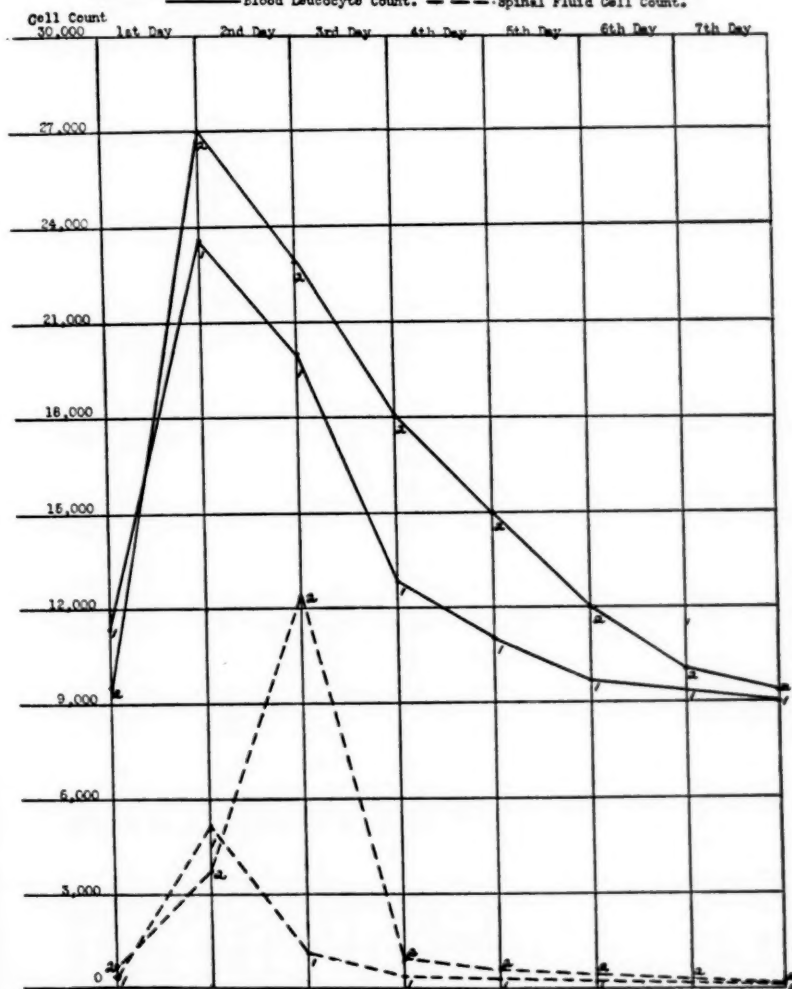


TABLE 3.

Case No.	Reaction	Cell count before injection	Amount injected	Relief drainage	Pressure	Spinal fluid cell count	Spinal fluid drained	Final pressure
13	3d injection	290	10 c. c. at 10 a. m.	5:30 p. m.	38 mm. Hg.	11,200	70 c. c.	4 mm. Hg.
	4th injection			12:30 p. m.	34 mm. Hg.	6,400	40 c. c.	4 mm. Hg.
	6th injection	94	20 c. c. at 10 a. m.	8:30 p. m.	36 mm. Hg.	5,000	60 c. c.	4 mm. Hg.
36	3d injection	120	20 c. c. at 10 a. m.	9:30 p. m.	40 mm. Hg.	13,600	60 c. c.	6 mm. Hg.
			20 c. c. at 10 a. m.	5:30 p. m.	38 mm. Hg.	10,400	60 c. c.	4 mm. Hg.
				10:30 p. m.	40 mm. Hg.	6,000	70 c. c.	4 mm. Hg.
38	4th injection	96	20 c. c. at 10 a. m.	8:00 p. m.	38 mm. Hg.	19,000	60 c. c.	4 mm. Hg.
28	2d injection	360	15 c. c. at 10 a. m.	8:00 p. m.	38 mm. Hg.	8,000	45 c. c.	6 mm. Hg.
4	4th injection	265	5 c. c. at 10 a. m.	5:00 p. m.	34 mm. Hg.	13,700	40 c. c.	4 mm. Hg.
				11:30 p. m.	38 mm. Hg.	14,000	60 c. c.	4 mm. Hg.
				1:30 a. m.	32 mm. Hg.	7,000	40 c. c.	4 mm. Hg.
5	2d injection	420	6 c. c. at 10 a. m.	3:00 p. m.	34 mm. Hg.	13,200	30 c. c.	4 mm. Hg.
				7:30 p. m.	38 mm. Hg.	8,000	90 c. c.	0 mm. Hg.
				12:30 p. m.	32 mm. Hg.	4,000	30 c. c.	2 mm. Hg.
11	4th injection	160	20 c. c. at 10 a. m.	7:30 p. m.	36 mm. Hg.	10,000	35 c. c.	4 mm. Hg.
3	2d injection	330	10 c. c. at 10 a. m.	4:30 p. m.	30 mm. Hg.	1,800	30 c. c.	6 mm. Hg.
28	3d injection	165	18 c. c. at 10 a. m.	7:30 p. m.	36 mm. Hg.	7,600	30 c. c.	6 mm. Hg.
				2:00 a. m.	32 mm. Hg.	4,200	30 c. c.	4 mm. Hg.
30	5th injection	125	20 c. c. at 10 a. m.	7:30 p. m.	30 mm. Hg.	8,600	30 c. c.	6 mm. Hg.
10	3d injection	145	20 c. c. at 10 a. m.	2:00 p. m.	22 mm. Hg.	480	30 c. c.	4 mm. Hg.
	4th injection	125	20 c. c. at 10 a. m.	10:30 p. m.	32 mm. Hg.	3,700	40 c. c.	6 mm. Hg.
19	2d injection	400	5 c. c. at 10 a. m.	11:30 p. m.	32 mm. Hg.	4,000	50 c. c.	4 mm. Hg.

Analysis of Table No. 3 shows that the reactions could become very severe at any time after the second injection, the first reactions were almost invariably mild, that the cell count of spinal fluid before injection was not an infallible guide in estimating the resultant reaction and that in some cases a very severe reaction might be produced by the injection of only a few c. c. of serum. Cardiac and respiratory embarrassment, when it developed, usually did so within 8 or 10 hours after the injection, and in a few cases where intracranial pressure was not soon relieved, stupor developed. We seldom waited for this stage to develop before relieving pressure by drainage. It is possible that all of the above cases would have survived without any interference, but because of our one unfortunate experience early in our work we were not inclined to take chances. I am convinced that in some cases, as No. 3, No. 10 and No. 19, drainage was unnecessary, but only the fluid examination and pressure readings gave us this information as the emotional states of these patients made clinical interpretation difficult. In practically all of the other cases the pressure embarrassment was obvious and confirmed not only by the pressure readings and cell counts but by the rapid relief, clinically, that invariably resulted. The pressure in all of these cases was found to be between 34 and 40 mm. Hg., and with one or two exceptions drainage was done by cisternal puncture, drainage was always slow and pressure reduced to normal without any ill effect. It will also be seen that the drainage resulted in a definite decrease of the intensity of the reaction. Table No. 3 may give the impression that complications considered serious were common. In the 201 reactions produced in this work and in 89 similar reactions developed in another work, complications (respiratory and cardiac) occurred 17 times and careful drainage never failed to give relief.

EFFECT ON THE PHYSICAL STATE OF PATIENTS.

A slight loss of weight and corresponding weakness was shown by many of the patients after the second or third injections. This early loss was usually quickly regained, improvement continued and the physical condition of most patients was definitely improved following treatment. In several cases of long standing amenorrhea menses were re-established. In a few cases the treatment had

a detrimental effect. Two patients with quiescent pulmonary tuberculosis showed active exacerbations and we feel that tuberculosis, either active or latent, is a contra-indication for treatment. The death of two other patients, who had been in an extremely poor physical state as a result of persistent fasting and hyperactivity previous to treatment was probably hastened somewhat by the additional burden put upon them.

EFFECT ON SEROLOGIC REACTION.

Interesting observations were made concerning the effect of aseptic meningitis on the spinal fluid reactions to the Wassermann and colloidal gold tests. Spinal fluid which gave negative reactions before treatment was started gave positive Wassermann reactions and paretic type of colloidal gold curve a short time after treatment was stopped. During this period the cell count was usually still above normal and the globulin increased. Re-examination made at periods from 8 to 11 months after treatment showed a Wassermann reaction weak or negative, but a persistence of a variable colloidal gold curve. At the time of later examinations the cell counts and globulin were down to normal or very slightly increased.

The number of cases in which such serologic examinations were made was not large but the results were quite constant. Unlike the Wassermann reaction of syphilis the strongest reaction for these fluids was obtained in the less sensitive, the plain, antigen. The following table gives the serologic findings in those cases that were checked after treatment.

PART III. COMMENT AND CONCLUSIONS.

COMMENT.

The reaction produced by the development of aseptic meningitis is severe and painful, but the effect of this treatment, judiciously administered, is beneficial to the physical state of the patients. As experience is gained, serious reactions can be avoided and complications, if they do develop, can be readily relieved. Cisternal, and less frequently, lumbar puncture was done on numerous occasions when the intracranial pressure was as high as 40 mm. Hg. and reduction of pressure to normal, by slow drainage, was in every case accomplished without any ill results.

SEROLOGIC FINDINGS.

Case No.	Date treatment started	Wassermann and colloidal gold	Number of injections	Date of last injection	Date of re-examination	Wassermann	Colloidal gold
43	3/18/24	Both negative	4	8/13/24	4/1/25	Plain Antigen 4 Plus Cholest. Antigen Neg. Plain Antigen Neg.	544432000
22	4/7/24	Both negative	3	5/16/24	4/1/25	Cholest. Antigen Neg. Plain Antigen Neg.	1234431000
36	4/7/24	Both negative	5	6/24/24	4/3/25	Cholest. Antigen Neg. Plain Antigen Neg.	2355544000
30	5/9/24	Both negative	5	7/23/24	4/4/25	Cholest. Antigen Neg. Plain Antigen 2 Plus	1233321000
33	5/9/24	Both negative	7	7/16/24	4/4/25	Cholest. Antigen Neg. Plain Antigen Neg.	0112332000
32	5/1/24	Both negative	5	7/17/24	4/5/25	Cholest. Antigen Neg. Plain Antigen 3 Plus	5555422100
39	3/12/24	Both negative	4	5/1/24	4/1/25	Cholest. Antigen Neg. Plain Antigen 3 Plus	5555543321
27	3/13/24	Both negative	5	6/11/24	4/4/25	Cholest. Antigen Neg. Plain Antigen Neg.	2223210000
	2/26/24	Both negative	5	7/11/24	4/10/25	Cholest. Antigen Neg.	0011000000

The intraspinal injection of inactivated horse serum, as here outlined, produces a strong stimulation to the body defensive mechanism and an intense reaction localized to the cerebro-spinal structures. From a physiological consideration the development of such a reaction should offer a valuable method of combating toxemia or low-grade infections affecting the central nervous system. No post-mortem study was obtained, but from clinical observation no neurological injury resulted from this treatment.

It was noted on all of the cases in which favorable results were obtained that improvement was shown during the course of the first four injections, while the cases which failed to improve during that period were not influenced by continuation of treatment, even when as many as eight injections were given. Inasmuch as the production of seven or eight reactions is inadvisable, because of detrimental effect on the physical state of the patients, this observation may be of value in determining the advisability of continuation of treatment. The poor results obtained in the chronic, deteriorated group of dementia præcox patients shows clearly that this method of treatment is of little practical value for such cases. The results obtained in the less chronic group of dementia præcox, and especially in those psychoses of toxic and infectious nature were far more satisfactory and, in selected cases, this treatment is apparently of definite therapeutic value.

What is the mechanism with which we are dealing? Carroll's work was based on the theory that dementia præcox might be due to a food chemico-deprivation resulting from alteration of choroid permeability and that the meningitic reactions might restore normal permeability. No definite theory was advanced by Carroll, Barr, Barry and Matzke, but they concluded "that a fundamental principle not yet fully determined is involved." Barr, in his last report, considers that the effects produced are not the result of any specific virtue residing in the horse serum but may be due to an increased circulation to the nervous system, aided perhaps, by the throwing out of white cells. Our opinion is somewhat different. It seemed that the severity of the reaction, the threat of death, made a strong appeal to the individual's instinct of self-preservation, produced a re-synthesis, to some degree, of the dissociated personality which resulted in the re-establishment of contact with reality. In dementia præcox, especially the chronic types, this remained as a fear reaction

which gradually diminished as subsequent reactions were survived and disappeared in time after the treatments were stopped. In the toxic and infectious types the fear reaction was slight or entirely absent, the mental clarity progressively improved, and it seems permissible to assume that the stimulation to the bodily resistance was responsible, to some degree at least, for a toxic elimination.

CONCLUSIONS.

1. Intraspinal injection of horse serum produces a strong stimulation of the body defensive mechanism, the intensity of the reaction is localized to the cerebro-spinal system.
2. Development of aseptic meningitis produces temporary improvement in a large percentage of both chronic and early cases of dementia præcox and other psychosis.
3. The incidence and degree of permanent improvement is much greater in dementia præcox of early stages than in the chronic, deteriorated types.
4. Aseptic meningitis as a therapeutic measure is of little value in the treatment of chronic dementia præcox.
5. It seemed to be a definite value in certain cases of early dementia præcox and psychosis of toxic and infectious nature.

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PART IV. CASE REPORTS.

GROUP I.

DEMENTIA PRÆCOX, PARANOID.

CASE No. 1.—L. C., a white female, 24 years of age, single, was admitted to hospital January 16, 1924. Psychotic manifestations were of 18 months' duration at that time. Patient was excited, combative and noisy, careless of appearance, entertained auditory hallucinations, ideas of reference, delusions of persecution, obsessions, somatic delusions, was egotistical and had no insight. Diagnosis of dementia præcox, paranoid type. Condition showed no improvement and patient became increasingly difficult to handle. Treatment was started May 5, 1924; six injections were given and although reactions were severe there was no appreciable change in patient's condition at any time. Results were entirely unsatisfactory.

CASE No. 2.—H. B., a white male, age 24, single, admitted to hospital May 2, 1923, psychosis of three months' duration. Gradual personality change, ideas of reference, vague delusions of persecutory nature with homicidal tendencies, egotism and lack of insight were outstanding features and diagnosis of dementia præcox, paranoid was made, although there was a certain amount of silliness and numerous somatic complaints that clouded the picture. Condition remained practically unchanged, he was extremely restless, careless of appearance, destructive and unable to join in either recreation or occupation, required constant supervision. Treatment was started January 31, 1924, two injections followed by severe reactions produced a remarkable change in his attitude. He became neat, quiet, assisted well with duties, was interested in his companions for the first time, but was in great fear of future injections and escaped shortly before the third was to be given. He returned home, where he made an adjustment for several months, then began to react to vague delusions again and was returned. Two more injections were given after May 10, 1924, following which patient took very active interest in all phases of hospital life, wrote home, was extremely neat, a reliable worker and respected ground parole. He was paroled home September 11, 1924, and made a good adjustment until December 16, 1925, when he again returned to the hospital. He has received no further treatment and lives a useful and comparatively happy institutional life. In this case the immediate results were very good and the final results may be considered fair.

CASE No. 3.—L. B., a white male, age 23, single, admitted to hospital November 10, 1923, psychosis said to have been of five months' duration. Diagnosis of dementia præcox, paranoid type was based on ideas of reference, affective impairment, vague persecutory delusions, mild egotism and absence of insight. This patient also showed many psychoneurotic manifestations. He became apathetic, careless of appearance, took no interest in occupation or recreation of any type. Treatment was started March 1, 1924; three

injections were given which resulted in marked improvement of physical health, fading of somatic delusions, re-establishment of interest and activity and a fair return of insight, became very neat, gave excellent assistance in work, enjoyed all recreations and returned home June 24, 1924. He returned voluntarily October 22, 1924. No further treatment was given as his adjustment to hospital life was excellent. He left the hospital March 3, 1926 and has been making a very satisfactory adjustment since that time. Immediate results in this case were strikingly good and the final results satisfactory.

DEMENTIA PRÆCOX, HEBEPHRENIC.

CASE No. 4.—A. B., a Polish woman, age 43, married, 7 children, admitted to hospital May 16, 1923. At time of admission patient was slightly depressed, restless and refused to eat. Conduct soon changed. She became mute, extremely silly with almost constant grimacing, reacted to hallucinations, showed many mannerisms. Diagnosis, dementia præcox, hebephrenic. Condition grew steadily worse, patient became extremely untidy, defiled at times, took no part in any occupation or recreation. Treatment was started February 6, 1924, six injections were given, several of which were extremely severe, and treatment was followed by a marked improvement. Patient answered questions for the first time, became neat, assisted with ward work and was paroled home June 20, 1924. Good adjustment was made for three months, then gradual relapse to former state made return necessary. No further treatment was given and condition has remained practically unchanged to the present time. Immediate results in this case were good but of only temporary nature.

CASE No. 5.—D. J., a white female, age 29, married, admitted to hospital October 6, 1922, in a disturbed state, was untidy, noisy, resistive and violent. A prominent tendency to silly smiling and grimacing was soon shown, with expression of peculiar absurd changeable ideas. Deterioration was progressive, interest in occupation and recreation was lost and treatment was started March 1, 1924. Two injections were given, the second followed by a very severe reaction, following which marked improvement was noted in return of interest in occupations, recreation and personal matters with some degree of insight. A certain degree of emotional blunting remained however and patient has remained in the hospital, where she continues to be very satisfactorily adjusted and the immediate good results in this case have been fairly well maintained.

DEMENTIA PRÆCOX, CATATONIC.

CASE No. 6.—R. H., a white male, age 35, single, admitted to hospital August 3, 1924, in catatonic stupor. Second attack, first attack in 1907. Patient remained mute, oblivious to surroundings, attitudenizing, negativistic and resistive. Diagnosis, catatonic præcox. No improvement and treatment was started November 13, 1924. Four injections were followed only by the

most temporary improvement with rapid relapse to former state, in which he remains at the present time. In this case not even temporary improvement was obtained.

CASE No. 7.—I. L., a colored female, age 18, admitted to hospital August 9, 1923, mute, rather stuporous, negativistic and resistive. A previous attack is stated to have occurred in 1921. Diagnosis dementia præcox, catatonic. Periods of excitement developed, patient was untidy, defiled, destructive and abusive. Treatment was started October 6, 1924, four injections were given which failed to produce any definite improvement and patient's condition remains practically unchanged to the present time. Treatment in this case was entirely useless.

CASE No. 8.—B. W., a white female, age 37, married, admitted to hospital September 11, 1923. First attack, was mute, negativistic, resistive and reacted to auditory hallucinations, showed semi-stupor broken by periods of mild excitement. Condition grew worse, had to be tube fed, remained in bed a constant care. Treatment—five injections followed by several severe reactions produced a gradual improvement, patient ate well, showed physical gain, dressed neatly, sat about the ward, went walking, attended various recreations and assisted with a few simple duties on the wards. After three or four months a slow but progressive relapse developed, hallucinations returned with increasing vividness and within six months after treatment she again became mute and inaccessible, as she remains to the present day. Her adaptation to hospital life has been improved but aside from this treatment was of only temporary benefit.

CASE No. 9.—J. B., an Italian male, age 36, married, admitted to hospital October 15, 1924, psychotic reactions of five months' duration. Mute, resistive, negativistic, auditory and visual hallucinations. Diagnosis dementia præcox, catatonic. Condition rapidly became worse, patient grew untidy, careless of appearance, took no part in recreation or occupation. Treatment started November 18, 1924; four injections were given, which produced a rapid mental clearing. Patient talked freely, took interest in his surroundings, gave excellent assistance with work, enjoyed recreation and respected ground parole, became neat but emotional blunting remained. Patient is still at the hospital in much the same state. Immediate results in this case seemed most encouraging and final results are fairly satisfactory as adjustment to institutional life has been greatly improved.

CASE No. 10.—B. E., a white female, age 31, married, first attack, admitted to hospital March 17, 1924, in apathetic, resistive state. Had previously been excited with homicidal tendencies. Patient became absolutely mute, negativistic, untidy, defiled and had to be fed. Reacted to auditory hallucinations with stereotyped movements. Diagnosis, dementia præcox, catatonic. Condition: no improvement, physical state declined and treatment started May 5, 1924. Six injections were given which resulted in marked physical improvement, gradual lessening of confusion, loss of hallucinations, reestablishment

of interest, patient became neat, cooperative and active. Improvement continued, patient was paroled September 24, 1924, and has maintained a satisfactory adjustment up to the present time. Results in this case were most satisfactory.

CASE No. 11.—M. P., a white female, 18 years of age, single, stenographer, admitted to hospital February 2, 1924. Psychosis of 3 months' duration. Diagnosis of dementia præcox, catatonic, made on basis of extreme negativism, resistiveness, mutism, short periods of violence. Hallucinations were probably entertained although not expressed. Patient became increasingly inaccessible, untidy and at times destructive. Treatment was started March 27, 1924, a series of nine injections were given, the greatest number of any of our series. Several of the reactions were very severe but in spite of severity and persistence only very temporary improvement was noted at any time and patient remains in practically her pre-treatment condition at the present time. Not even satisfactory temporary results were obtained in this case, which influenced us to doubt the advisability of continuing treatment if no improvement was shown after the third or fourth injection.

CASE No. 12.—M. P., a white female, age 27, married, one child six years of age. Second attack. First attack in 1921, in hospital from March, 1921, to June, 1923. Present admission August 26, 1924. Diagnosis of dementia præcox, catatonic, based on negativism, resistiveness, stereotypy, mutism and periods of excitement. Patient became untidy, defiled, destructive and violent at times, remained entirely inaccessible. Treatment was started October 6, 1924, a series of five injections were given which produced slight temporary improvement, patient cooperated better, became more neat and violent tendencies were lost, however no true lessening of the psychotic influence developed and patient in the course of a few months relapsed to her former state, in which she continues at the present time. Results in this case were unsatisfactory.

CASE No. 13.—P. M., a white male, age 25, farmer, married, was admitted to hospital January 9, 1924, mental symptoms were then of two months' duration. Diagnosis of dementia præcox, catatonic, made because of prominence of negativistic reactions, stereotypy of movements, alternating periods of stupor and excitement and reactions to auditory and visual hallucinations, mostly of religious nature. Psychotic immersion steadily deepened and treatment was started February 25, 1924. Five injections were given, followed by several very severe reactions. Gradual improvement was noted after the third injection, which was progressive, interest in surroundings were aroused, he became communicative, cooperative, took active part in occupation and recreation, hallucinations decreased and were finally lost, insight gradually returned and patient was paroled July 13, 1924. He was discharged April 28, 1926, and has continued to make a very satisfactory adjustment. The relationship of this patient's improvement to the treatment was striking and results, both immediate and final, entirely satisfactory.

PSYCHONEUROSIS, HYSTERICAL.

CASE No. 14.—N. R., a white female, age 48, married, two children. Admitted to hospital November 17, 1923. First attack, of several months duration. Menopause had occurred five years previously and at no time was there any evidence of anxiety, agitation or depression. Patient was and remained in a dream state, oblivious to her surroundings, gave herself no personal attention and was inaccessible for examination. Physical examination showed lost corneal and pharyngeal reflex, shifting areas of anaesthesia and hyperaesthesia. Serologically and neurologically otherwise negative. Diagnosis of psychoneurosis, hysterical, made. No improvement was shown, patient became self-abusive, untidy, defiled and reacted with fantastic mannerisms. Treatment was started March 27, 1924; three injections were given which failed to affect her in any way. Patient's condition continued to grow worse, health failed steadily and she died August 22, 1925, of exhaustion of chronic insanity. Treatment in this case was of no benefit.

PSYCHONEUROSIS, PSYCHASTHENIC.

CASE No. 15.—B. S., a white female, age 26, single, stenographer, had shown mental symptoms for 18 months previous to admission on February 12, 1924. Patient expressed vague delusions of persecutory nature and asocial tendencies suggestive of paranoid praecox but the prominence of phobias, obsessions, morbid doubts and impulsions, anxiety, periods of depression and agitation indicated psychoneurosis, psychasthenic type. Condition in hospital became steadily worse, patient was noisy, abusive, non-cooperative, untidy and at times destructive, made one suicidal attempt and required constant supervision. Treatment was started June 8, 1924, which resulted in a marked physical improvement and patient gradually became more cooperative, quiet, assisted with light duties and took part in some recreations. While adjustment to hospital life was greatly improved, obsessions and delusions were never lost and a trial at home showed her unable to adjust satisfactorily. She returned to hospital where she still remains. Immediate results in this case were encouraging but the final result only some improvement to adaptation to institutional life.

CASE No. 16.—F. H., a white male, age 34, admitted to hospital January 12, 1924, had for six months expressed and reacted to numerous somatic delusions and obsessions. Diagnosis of psychoneurosis, psychasthenic type, based on phobias, obsessions, nervous tension and anxiety. Condition became progressively worse, he grew resistive, mute, was tube fed but had persistent anorexia, became untidy, defiled and physical condition was alarming. Treatment was started, eight injections were given, which resulted in temporary improvement. Patient retained food, later fed himself, gained in strength and weight, dressed himself, became observant. Relapse soon occurred however, almost to former state and patient died February 5, 1925, of exhaustion. Treatment in this case gave only temporary beneficial effects which we were unable to maintain.

PSYCHOSIS WITH SOMATIC DISEASE.

CASE No. 17.—M. H., a white boy, age 15, admitted to hospital May 28, 1924. Had shown gradual change in character during the previous year, was markedly undernourished, apprehensive and listless, many phobias, obsessions, he had snakes in his stomach and had elaborated a fixed delusional system on that basis. Interest could not be diverted, he ate very little and induced vomiting. Diagnosis of psychoneurosis, psychasthenic type made. Condition, mental and physical, grew steadily worse. Treatment was started July 24, 1924, two injections followed by severe reactions produced rapid physical improvement. Patient became cooperative and active but continued to complain of vague gastric distress. Barium meal studies then showed persistent spasticity of ascending colon. Operation showed adhesions with enlarged glands, suggestive of tuberculosis. Adhesions removed and glands injected with alcohol. After recovery gastric distress disappeared. Diagnosis revised to psychosis with somatic disease. Patient paroled September 17, 1924. Has enjoyed excellent health and has made a most satisfactory adjustment since that time. While intra-spinal injections formed only one phase of the treatment in this case the results obtained from it were entirely satisfactory and of definite value.

CASE No. 18.—C. T., a white male, age 23, admitted to hospital July 23, 1923. Mental symptoms had been of short duration. At first patient was alternately depressed, apathetic and excited, destructive and violent, became mute and resistive. Diagnosis of catatonic præcox was made. Rapidly progressive mental and physical decline followed, patient was extremely untidy, defiled, emaciated, had to be dressed, fed and carried about. He was one of the first group selected for treatment because of hopeless condition. Blood Wassermann negative. Spinal fluid Wassermann negative in Cholesterinized Antigen, strongly positive in Plain; cell count 39 with increased globulin, a state very similar to that produced, as we later learned, by aseptic meningitis. On this basis diagnosis was revised to psychosis with somatic disease, meningitis, non-specific. Treatment was started January 26, 1924, two injections, each followed by severe reaction, produced a startling change in this patient. He became observant, then alert, friendly and cooperative, and later gave a remarkable account of his feelings while in the stuporous helpless state. Physical health rapidly improved, he was neat, gave excellent assistance about the ward, took active part in recreation and showed marked musical ability. Within a month recovery was practically complete. He was paroled March 23, 1924, and since that time has been entirely well. The almost miraculous results in this, one of our first cases, was most encouraging.

MANIC DEPRESSIVE, MANIC.

CASE No. 19.—G. M., a white female, age 33, married, two children, admitted to hospital July 14, 1924. Psychosis of six months' duration and developed three months after childbirth. On admission patient was hyper-

active, hyper-religious, emotionally exalted, expansive delusions, auditory and visual hallucinations. Diagnosis, manic depressive, manic, toxins of pregnancy probably etiological factor. Patient failed to show any improvement during the following year, in fact condition grew worse, somatic and persecutory delusions developed, she became noisy, at times destructive and abusive. Treatment was started July 23, 1924, two injections were given, the last with very severe reaction. Physical state was benefited and patient soon became much more stable, cooperated well, took an active interest in occupation and recreation while the intensity of delusions faded. This condition has been maintained to the present time and while patient is not able to make a social adjustment her adaptation to institutional life has been greatly improved, and treatment in this case was of some benefit.

CASE No. 20.—M. C., a white female, age 56, admitted to hospital December 11, 1923. Third admission. First time in hospital March 8, 1917, to November 23, 1917; second residence, March 21, 1919, to March 2, 1920. Diagnosis, manic depressive, manic. Patient was noisy, abusive, violent and destructive, hyperactive, emotionally exalted with typical flight of ideas. Constant seclusion was necessary, patient raved day and night, ate but little, was untidy and rapidly lost weight and strength. Condition became alarming and an injection was made June 21, 1924, under light anaesthesia, repeated one week later, after which patient became quiet, was able to be on the ward. Confusion remained and health did not improve however and patient died September 22, 1924, of exhaustion. While the effect of treatment on patient's mental state was good the strain of the reaction on her lowered resistance was undoubtedly undesirable.

INVOLUTIONAL MELANCHOLIA.

CASE No. 21.—N. P., a white female, age 43, married, admitted January 6, 1924. Duration before admission 14 months. A typical case of involutional melancholia, characterized by anxiety, agitation, unreality complex and terrifying delusions. Condition grew steadily worse, patient had to be tube fed, was self-abusive, extremely noisy and became emaciated. Two injections were given in March, 1924, followed by slight improvement, three more were given in May, following which patient became quiet, delusions faded in intensity but anxiety and agitation persisted. In the course of two months condition gradually relapsed to former state. Two more injections were given, which produced the greatest mental improvement obtained in this case. Patient, for the first time since admission, was quiet, talked rationally with relatives and physicians, however physical state was extremely poor and patient died August 11, 1924, of exhaustion. Physical state in this case made continued treatment dangerous but patient's mental state was so distressing that the procedure seemed justifiable.

CASE No. 22.—R. D., a white male, age 56, admitted to hospital March 1, 1923. No previous psychotic attack. Duration 10 months. On admission patient was anxious, agitated, depressed, moaned constantly, had no difficulty in thinking. Diagnosis, involutional melancholia. Condition gradually grew

worse, self-accusatory delusions and fear of impending danger increased. He became practically oblivious to his surroundings, careless of self, could not sleep and all attempts to divert his interest failed. Treatment was started April 4, 1924, two injections, followed by severe reactions, produced a very encouraging degree of improvement. Interest in his surroundings developed, he assisted with light duties, enjoyed ground parole, became neat and comparatively cheerful as the fears and delusions faded. He was at home on a visit from June to November, 1924, was paroled in November, 1925, and since that time has made a very satisfactory adjustment. Treatment in this case appeared to be very beneficial.

GROUP 2. (OLD) DEMENTIA PRÆCOX.

DEMENTIA PRÆCOX, SIMPLE.

CASE No. 23.—J. D., admitted to hospital April 19, 1921. Paternal grandfather and maternal grandmother insane. At time of admission he was in good physical health; 26 years of age, single and psychosis then of two years' duration, characterized by progressive defects of interest and seclusiveness, carelessness of personal appearance, increasing apathy and peculiar behavior. No hallucinations or delusions were expressed. Diagnosis, dementia præcox, simple type. Condition grew progressively worse and when treatment was considered patient was in a vegetative state, had to be dressed, fed, led about and frequently defiled. Four injections were given and resulted in slow but progressive improvement, patient showed a remarkable degree of interest in social and recreational activity, developed fair initiative, became neat and tidy and assisted with work about the institution. He was out on parole on several occasions but unable to effect a satisfactory adjustment. During the last year a gradual deterioration has been noted and patient seems to be relapsing to his former state. Final result, Fair—definitely better institutional adjustment for at least three years.

CASE No. 24.—S. K., a white male, age 32, single, farmer. Admitted to hospital July 31, 1918, and had shown psychotic traits with homicidal reactions for three years previous to admission. On admission he expressed visual hallucinations and delusions of religious nature, was deteriorated, disoriented, dull and apathetic. While early reactions indicated strong paranoid trends the personal indifference, rapid deterioration, interest defects and apathy with the disappearance of expression of hallucinations and delusions led to a final diagnosis of dementia præcox, simple type. For years he had been extremely apathetic, unable to assist in any duties or recreation and was untidy. Four injections were given, which resulted in a marked degree of mental improvement, patient became tidy, dressed neatly, worked well about the hospital. He watched but took no active interest in recreation and showed no insight. Several months after treatment afternoon temperature, cough and expectoration developed and tubercle bacilli found in sputum. Patient soon became quiescent but mental improvement was rapidly lost and patient relapsed and still remains in his pre-treatment status.

DEMENTIA PRÆCOX, HEBEPHRENIC.

CASE NO. 25.—A. W., a white female, single, 20 years of age, admitted to hospital February 1, 1921. Mother neurotic, grandfather insane. On admission patient was destructive, combative, disoriented, entertained visual and auditory hallucinations and diagnosis of catatonic præcox was considered, however behavior soon changed, she developed a prominent tendency to silliness, smiling, grimacing and odd mannerisms which led to a final diagnosis of hebephrenic præcox. When taken for treatment patient was mildly destructive, untidy and apparently had lost all contact with reality. Four injections were given which resulted in temporary improvement, patient took notice of her environment, assisted with light duties, talked rationally, at times took some interest in needlework and reading, however these encouraging reactions were short-lived and patient soon reverted to her former mode of life.

CASE NO. 26.—E. T., a white male, age 30, single, admitted to hospital on April 29, 1915. He was a mixed type of dementia præcox with predominant hebephrenic characteristics of senseless smiling, grimacing, mannerisms of speech and actions but subject to frequent outbursts of violence, evidently reactions to hallucinations and delusions. Almost constant restraint was necessary, mental deterioration was advanced, he was unable to carry on any conversation and was apathetic and seclusive when not violent. Six injections were given, which resulted in a slow but progressive improvement. He lost his violent tendencies, showed more interest in his surroundings, became more neat and became a good helper in hospital work. This improvement has been fairly well maintained and patient's adjustment to institutional life has been definitely improved.

CASE NO. 27.—M. B., a white female, age 24, single, admitted to hospital November 10, 1921, had for two years previous to admission shown gradual and increasing manifestations of visual hallucinations, disinterest, seclusiveness, automonologia and silly conduct. Diagnosis, dementia præcox, hebephrenic with progressive deterioration in hospital. Six injections were given which produced slow but progressive improvement manifested by increasing interest in her surroundings, assisted with light duties, enjoyed recreation and talked relevantly, her hallucinations seemed to be entirely lost for a time; she was paroled home where she made a good adjustment for three months, when emotional instability made return to hospital advisable. Since return there has been a slow but progressive deterioration and the final result must be considered unsatisfactory.

CASE NO. 28.—R. W., a white male, age 25, single, admitted to hospital July 10, 1919. Because of abrupt onset, hyper-religiosity, restlessness and periods of excitement with violence and homicidal tendencies he was first considered manic depressive but the rapid progression of mental deterioration, changeable nature of delusions, absence of insight, the development of silly smiling, grimacing, odd mannerisms of speech and action made revision of diagnosis to dementia præcox, hebephrenic necessary. For a year previous

to treatment he had been apathetic, completely disoriented, irrelevant in speech, untidy, unable to do any work, could not be interested in recreation and persistently destroyed his clothing. Five injections were given which resulted in marked improvement of physical condition and a definite change in mental state. He showed unusual interest in his surroundings, quickly learned to assist with ward duties, was more neat, ceased to be destructive and showed marked interest in such recreation as baseball and picture shows. This improvement was maintained for several months after the termination of treatment, then slow but progressive relapse occurred and his present state is practically the same as before treatment.

CASE No. 29.—R. S., a white female, age 30, married, admitted to hospital December 30, 1922. Diagnosis of dementia præcox made on basis of disorientation, outbursts of silly laughter, grimaces, reaction to hallucinations and delusions, irrelevancy and apathy. Condition grew steadily worse, patient was untidy, at times violent, took no interest in either recreation or occupation. Two injections were given which resulted in unusually severe reactions and as no evidence of any beneficial change was noted treatment was not continued. The present condition of this patient is practically the same as before treatment and results in this case were unusually unsatisfactory.

CASE No. 30.—S. R., a white female, age 25, single, admitted to hospital January 15, 1919, and had shown mental abnormality for two years prior to admission. Diagnosis of dementia præcox, hebephrenic, was based on seclusiveness, prominence of silly smiling, laughter, grimacing, vivid reaction to auditory and visual hallucinations and peculiar mannerisms. Condition steadily progressed, patient became completely disoriented, untidy, noisy, destructive and occasionally violent. All attempts to interest her in occupation or recreation had failed. Seven injections were given in this case but failed to produce even temporary improvement. Patient's present condition is about the same as before treatment was started and here too, the results were entirely unsatisfactory.

CASE No. 32.—M. R., a white female, age 31, single, admitted to hospital November 6, 1912, in an excited state. Notes on this case are vague, an original diagnosis of manic-depressive psychosis was later revised to dementia præcox, hebephrenic. She showed advanced deterioration, was untidy, destructive, rolled about the floor, showed many mannerisms with almost constant grimacing and silly laughter. A series of four injections were given which failed to effect any appreciable change in patient's behavior, even of temporary nature and the patient's condition remains unchanged to the present time. Results in this case were also entirely unsatisfactory.

CASE No. 33.—D. B., a white female, age 25, single, admitted to hospital September 17, 1920, diagnosed dementia præcox, hebephrenic, on basis of many mannerisms, prominence of silly smiling, vividness of auditory and visual hallucinations and seclusiveness. The occasional expression of persecutory delusions and irritability indicated mild paranoid trends as well. Patient became untidy, at times destructive, a constant care, unable to take

part in any occupation or recreation. A series of five injections were given which produced a marked improvement both in physical and mental condition. Interest in occupation and recreation was reestablished, she read, did fancy work, became neat and tidy, attended entertainments and wrote several good letters to her parents. This state was maintained for about a year when a gradual relapse was noted, this has progressed and at present patient's condition is but little better than it was before treatment. Immediate results in this case were most promising but the final results disappointing.

CASE No. 34.—M. B., a white female, age 27, married, whose psychosis was of three years' duration. Patient had shown very rapid deterioration, was disoriented, constantly laughing, smiling or grimacing, actively hallucinated, untidy and had lost all contact with reality. Diagnosis of dementia præcox, hebephrenic fully confirmed by course in hospital. A series of eight injections were given, but no actual improvement was obtained at any time, other than very temporary remissions in her noisy and restless activities. Present condition is practically the same as that before treatment and the results in this case were entirely unsatisfactory.

DEMENTIA PRÆCOX, PARANOID.

CASE No. 31.—L. B., a white female, single, age 27, whose psychosis was of three and one-half years' duration. The patient was a mixed type of dementia præcox in whom silly smiling, laughing and grimacing, mannerisms and bizarre ideas alternated with ideas of reference, egotism, delusions of persecutory nature, violent and assaultive reactions. The paranoid phase soon predominated and she was so classified. Mental deterioration was rapid, she became untidy, destructive and so frequently violent that constant watching and frequent restraint were necessary. A series of seven injections were given, accompanied by several very severe reactions. Immediate results were encouraging, patient became neat, quiet and sociable, played the piano and took a little interest in occupation and recreation. The improvement, however, was short-lived, the delusions and hallucinations recurred and patient rapidly regressed to her former state, with the exception that her outbursts of violence were and have remained much less frequent even to the present time. While the immediate results of treatment in this case were encouraging the final outcome was disappointing.

CASE No. 35.—I. M., a white male, age 27, single, whose psychosis of four years' duration was characterized by marked asocial tendencies, very slight deterioration, with a wealth of delusions of persecutory nature, well elaborated and reacted to by outbursts of violence and runaway tendencies. Two injections were given which were followed by strong reactions. No true change in patient's mental state was effected but adaptation to institutional life was definitely improved, he became a good worker, respected ground parole and reaction to delusions were less frequent and less drastic. This condition has been maintained to the present time and the final result may be considered as better institutional adjustment.

CASE No. 36.—J. P., a white male, age 33, single, admitted to hospital December 1, 1915, and diagnosed dementia præcox, paranoid. Diagnosis was confirmed by course in hospital, patient became seclusive, entirely lost in his delusions of unpleasant nature, surly, untidy, gave no assistance at any occupation and joined in no type of recreation. Five injections were given, followed by severe reactions, which produced only very temporary beneficial results. Patient showed renewed interest in his surroundings and joined in assisting at work for a short time, then quickly relapsed to his former state, where he remains at the present time. Final results in this case were disappointing.

DEMENTIA PRÆCOX, CATATONIC.

CASE No. 39.—S. W., a white female, age 20, admitted to hospital September 6, 1920, first diagnosed dementia præcox, simple type, later revised to catatonic type on the basis of persistent mutism, negativism, resistiveness, stereotypy and reactions to unexpressed hallucinations. From date of admission until treatment was started patient had never spoken a word; she was untidy, defiled, could not be interested in any form of recreation or occupation. A series of five injections were given with temporary improvement. After the second injection patient talked for the first time and she told of her delusions and hallucinations, a remarkable example of dissociated personality. Patient became more tidy, assisted with light duties, attended some recreation but her interest was neither active nor sustained and she soon relapsed into her former state. This is another case in which the early results were as encouraging as the final result has been disappointing.

CASE No. 40.—W. W., a white male, age 25, single, admitted to hospital June 19, 1922. Mental deviation dated back a year and a half, following difficult adjustment to contemplated matrimony and sex trauma. At time of admission he was in catatonic stupor from which he roused several weeks later, then relapsed and remained in a state of deep apathy, entirely oblivious to his surroundings, had to be tube fed, dressed and was a constant defiler. This patient was one of the first to be treated, showed encouraging improvement after the second reaction, recognized several former acquaintances, fed and dressed himself and was tidy. An extremely severe reaction followed the third injection and patient suddenly died a respiratory death. This represents our only fatality and we feel that, with the advantage of acquired experience, it could have been avoided.

CASE No. 41.—A. H., a white female, married, age 29, admitted to hospital February 6, 1924, in state of extreme resistiveness, negativistic and impulsive, mute and hallucinated. Psychosis of two years' duration previous to admission. Diagnosis, dementia præcox, catatonic. During stay in hospital patient was untidy, destructive, defiled, extremely resistive and violent when interfered with, although she seemed constantly in a stuporous, dreamlike state. Four injections were given which were entirely devoid of any beneficial effects and treatment was discontinued. No improvement and patient died at another sanatorium January 6, 1926, of exhaustion.

CASE No. 42.—M. C., a white female, age 26, single, admitted to hospital September 30, 1918. Diagnosis of catatonic præcox based on prominence of negativistic attitude, mutism, stereotypy with periods of excitement. Condition had grown progressively worse and at time treatment was started she was mute, untidy, at times violent, tearful, emaciated, had to be dressed and fed, and was oblivious to her surroundings. Early improvement following treatment was not well maintained so treatment again resumed, a total of eight injections were given, with decidedly beneficial results, a renewed interest in her environment, attention to personal appearance, emotional stability and relative freedom from hallucinations. Patient was paroled home and made a good adjustment but died eight months later, cause not stated. Results in this case may be considered fairly satisfactory.

CASE No. 43.—H. G., a white male, age 39, married, admitted to hospital July 24, 1915, with outstanding symptoms of muscular rigidity, attitudinizing, alternate stupor and excitement, mute but hallucinated. Diagnosis of dementia præcox, catatonic made and confirmed by course in hospital. Patient grew careless of appearance, seclusive, resistive and negativistic, took no interest or participation in occupation or recreation and was in poor physical state when treatment was started. A series of four injections was followed by slow but progressive improvement, both mental and physical, interest in his surroundings, in occupation and recreation was gradually reestablished; he became neat, cooperative and friendly; improvement continued during the following year, patient has returned home and is making a very good social adjustment. Result in this case is considered most satisfactory.

CASE No. 44.—C. C., a white male, single, age 22, admitted to hospital April 30, 1922, had shown psychotic traits for three years with nomadic tendencies, negativism, phases of stupor and excitement. Diagnosis of catatonic præcox confirmed by course in hospital. Condition grew steadily worse and when selected for treatment patient was deeply deteriorated, extremely apathetic, untidy, unable to carry on any conversation, had to be fed, dressed and led about. Three injections, which produced severe reactions, were given and remarkable improvement followed, patient became alert, interested in his surroundings, neat and tidy, assisted with work, later did skilled work, took an active part in recreation such as baseball, fishing and picture shows, physical condition was improved and he was paroled home, March 4, 1924. He made an excellent adjustment until March 30, 1925, when, following alcoholic excess and venereal infection he showed beginning relapse. He has received no further treatment, is still at the hospital, leads an active and comparatively happy institutional life. The immediate reaction in this case was striking and the final result may be considered fairly satisfactory.

CASE No. 45.—I. D., a white male, single, age 26, whose psychosis was of seven years' duration, typical catatonic præcox. No improvement had been shown at any time, deterioration was progressive, all contact with reality had been lost and patient was leading a vegetative type of existence. A

series of three injections was given with a moderate temporary improvement as patient became more active, showed some interest in his surroundings, played baseball occasionally, was neat and orderly. In the course of two months a rapid physical decline occurred, patient became actively tubercular and relapse to former state resulted. In this case the injections were probably large factors in relighting a quiescent tubercular condition and while immediate results were encouraging the final result was unsatisfactory.

DEMENTIA PRÆCOX, PARANOID.

CASE No. 37.—R. K., a white male, age 31, married, admitted to hospital June 29, 1920. Diagnosis of dementia præcox, paranoid based on asocial tendencies, ideas of reference, hyper-religiosity, delusions of persecutory nature, auditory and visual hallucinations with violent reaction. Patient's condition steadily regressed, he was unable to carry on any occupation, was careless of personal appearance and a constant source of danger. Five injections, with several severe reactions, produced a fair degree of improvement. He became more observing and interested in his surroundings, assisted with light work, enjoyed baseball and lost his violent reactions. After several months, reactions to hallucinations and delusions again appeared, interest in work or recreation quickly subsided and he relapsed to his former state with the possible difference that his reactions are now less violent. Immediate results in this case were encouraging but only temporary in nature and final results were entirely unsatisfactory.

DEMENTIA PRÆCOX, CATATONIC.

CASE No. 38.—E. H., a white male, age 33, married, admitted to hospital December 8, 1917. Diagnosis of dementia præcox, catatonic, based on abrupt onset, impulsive actions followed by short stupor states, stereotyped movements, resistiveness, negativism and mutism with apparent but unexpressed hallucinations confirmed by course in hospital. Patient who had been a school teacher, steadily regressed, lost all contact with reality, became untidy, unable to join in any occupation or recreation. A series of four injections were given which produced considerable improvement. Patient showed increasing interest in his environment, enjoyed music and played the violin a bit, assisted with duties about the ward, played baseball and enjoyed other recreation. At no time was he free from confusion, however, and after a period of five or six months a steady decline was apparent which has continued and for the past year his condition has been practically the same as it was before treatment. This is another case of encouraging early results but unsatisfactory final outcome.



EPILEPSY AND THE ENDOCRINES.

By J. C. PARTRIDGE,

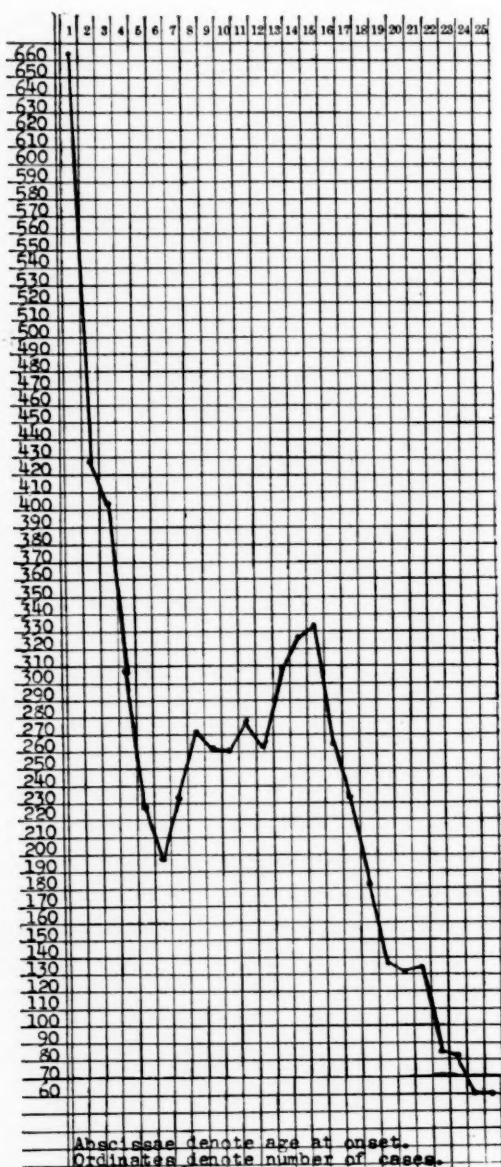
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It is a well-established fact that the glands of internal secretion play an important rôle in the growth and development of the human body as is demonstrated by the conditions produced by various dysfunctions of these glands such as cretinism, infantilism, gigantism, acromegaly, myxedema, etc.

With this in mind it is interesting to study the ages of onset of epilepsy taken from the histories of 7200 admissions to Craig Colony as given on following page.

Various observers (Hall "Adolescence," 1904, Vol. I; Donaldson, "The Growth of the Brain," 1897), conclude that growth of the body practically ceases at from 23 to 25 years of age. By referring to the table it will be noted that the onset in over 90 per cent of the cases of epilepsy in which the age of onset is known occurs during this developmental period. Further that comparatively few cases occur after puberty when full development has practically been reached. The most rapid growth of the brain is during the first four years of life (Donaldson, "The Growth of the Brain," 1897; Richard J. A. Berry, M. D., "The Journal of Mental Science," January, 1928), and during this period we find the onset of 1804 or 26 per cent of the cases and during the first year of life when the brain increases two and one-half times in weight we find 664 or 9 per cent of the cases, by far the greatest for any one year. During the fifth and sixth years there is a further decrease; then, as we approach puberty, at which time the endocrine system undergoes a marked change, there is an increase until during the 13th, 14th and 15th years we find 969 or 14 per cent. After puberty is passed we find a rapid reduction from year to year until after the twenty-fifth year of life there are only 681 or a little less than 10 per cent.

From this table it is evident that there are two periods of life wherein the greatest number of cases of epilepsy develop; namely the first four years of life and puberty. Had we only the one group



Unknown	338
Childhood	45
First year	664
Second year	429
Third year	403
Fourth year	308
Fifth year	229
Sixth year	198
Seventh year	234
Eighth year	271
Ninth year	261
Tenth year	260
Eleventh year	279
Twelfth year	263
Thirteenth year	309
Fourteenth year ...	327
Fifteenth year	333
Sixteenth year	265
Seventeenth year ..	232
Eighteenth year	182
Nineteenth year ...	137
Twentieth year	131
Twenty-first year ..	134
Twenty-second year..	85
Twenty-third year..	82
Twenty-fourth year..	60
Twenty-fifth year ..	60
Above 25th year....	681

7200

of early life one might attribute it to some structural change of the nervous system, but when one considers also the group occurring at puberty it would seem that the endocrine system offers the better field for study.

Inasmuch as menstruation is known to be intimately associated with the endocrine system, an effort to demonstrate endocrine dysfunction was made by the study of the menstrual records of 124 female patients over a period of five years. The minimum age at the beginning of this period was 15 years and the maximum age at the end of this period was 35 years. (Pregnancy, of course, is excluded.) A perusal of these records would, I am sure, convince the most skeptical that irregularities of menstruation are much more common than it is possible to demonstrate. Realizing the difficulty of determining just what should be considered normal the subject was approached from two angles. First those in whom the menses were definitely known to be absent for three consecutive months and second those in whom the menses were definitely known to have been absent for ten or more months during the period. The first group gave a total of 35 or 28 per cent and the second group a total of 22 or 17 per cent. When one realizes that a very large number of these patients are low grade mentally and that in compiling these figures anything of a questionable nature was regarded as normal it is not hard to presume that the actual percentage is much higher than shown. If we then add those who menstruate too frequently or those in whom the menses are too scanty or too profuse our percentage would be much greater and, I believe, well over 50 per cent. A similar group of normal females for comparison with the above was not available but it would seem that no such irregularities would be found.

This paper is prepared with the full knowledge that the endocrine system has been accused of being responsible for nearly every form of illness to which the human body is heir and is not offered as an attempt to prove that epilepsy is caused by endocrine dysfunction. Its purpose is to call attention to the apparent connection between so-called epilepsy and the endocrine system with the hope of stimulating further investigation along this line.



REMARKS ON GROUP ANALYSIS.*

BY HANS C. SYZ, M. D., NEW YORK CITY.

It is hardly necessary to say how significant an experience it has been to me as to others earlier associated with the Phipps Clinic, to have come into first-hand contact with the broad biological principles of integration which Dr. Meyer¹ has for so long emphasized. The extension of these formulations to the field of normal and pathological behavior permits us to envision the interrelations and interdependencies of individuals as constituent elements in a yet wider social structure. In the work of Dr. Burrow² the reactions and maladaptations of individuals in their social integrations are given practical demonstration through submitting these reactions to experimental test under the controlled conditions of observation afforded in an actual social setting. It is with great pleasure that, at Dr. Meyer's suggestion, I am reporting on this occasion certain features of our endeavors in the integral analysis of social groups.

In the attempt to understand neurotic disorders we have come to disregard many distinctions which were based on a difference of external appearance and which determined the classifications of a descriptive method. Even if one does not follow the too schematic teaching of those psychopathological interpretations which tend to reduce human action and feeling to two or three basic trends, it would seem to be of especial value to search for unitary and specific elements that may be the occasion and essence of seemingly widely divergent mental derangements. The interest of a more dynamic trend is towards uncovering relatively simple underlying factors which, because of their repressive and obstructive

* Paper read at the 15th anniversary of the opening of the Henry Phipps Psychiatric Clinic, Johns Hopkins Hospital, April 30, 1928.

¹ Meyer, Adolf, "Objective Psychology or Psychobiology with Subordination of the Medically Useless Contrast of Mental and Physical," *The Journal of the American Medical Association*, September 4, 1915.

² Burrow, Trigant, "The Social Basis of Consciousness," Harcourt, Brace & Co., New York, 1927.

character, may have led to a great variety of disturbances and symptom-pictures. It is the aim of group-analysis to approach and to determine these primary factors of conflict and of obstructed function as they are found in the interactions of the community at large—factors which are regarded not as peculiar to neurotic behavior, but as occurring in any normal manifestation.

I have not in mind here an historical procedure that would trace back a specific symptom or maladjustment to specific early experiences or interferences. We endeavor rather to discover those elements that are the active and determining agents in the *immediate* situation. They may be found to consist in specific, substitutive features of the subjective mood as well as of the objective inter-individual relationships. These typical features are essentially identical, not only in apparently unrelated psychopathological signs but also in the less outstanding disturbances of normal interchange.

Let us consider, for example, the condition we term "self-consciousness," wherein we find an internal conflict, a state of self-division, a tendency to compare one's appearance with a picture of behavior as suggested by the standards and expectations of a social group. The individual's effort is occupied with this *picture* of behavior even if this be quite at variance with his actual needs, with his capacities and with his justified position in the surrounding social body.

In this situation there are elements which lead in their combination, ramifications and sequelæ to features widely divergent in their surface expressions; to hesitations, frustrated activities and overcompensations, to fears and disappointments, to states of depression and elation. From this familiar background we see the ready transition to suspicions and to clearly paranoid and persecutory phenomena. From the ambivalent feeling-tone of these self-conscious states we follow the line that leads to the more marked contradictions evident in compulsive or obsessive conditions and to the still more sweeping dissociations that release or activate primitive and automatic patterns.

But the identical elements of a misdirected self-awareness are to be disclosed also in the inhibitions, indirections and discrepancies of our normal interchange. There is here, as Dr. Burrow has found, a tendency to live up to an image of self, a state of constant transference to the exactions of this self-image as it is pro-

jected upon the persons and institutions that compose the surroundings. The direct relation to immediate realities is lost and is replaced by an habitual mood-dependence upon reflected images. This arbitrary superstructure occasions anomalous tensions and artificial drives and these obstruct and contradict natural and unsophisticated action.

It is the purpose of group-analysis to search into these inhibitive factors found active throughout man's social interfunctions generally. In this inquiry the phenomena of the customary interactions are not taken for granted; they are not accepted in their conventional meaning but are subjected to an examination for their possible latent or indirect content. The material that presents itself for examination may be any statement, question or emotional response that occurs at the time of the experimental session. Under the conditions the observer naturally will not enter upon a discussion of the object toward which a statement may be directed. Instead he attempts rather to call the attention back to the motive or to the subjectively assumed position from which the statement has arisen. The opportunity is given to the members of a group to state without conventional restrictions the immediate inter-individual attitude expressed by the mood-undercurrent in a given reaction—an undercurrent which may be quite at variance with the content openly presented. For some time we have been accustomed to apply a similar procedure to the more unusual symptoms of the neurotic patient; it is of interest now to view, along with this, the discrepancies of the normal interchange and to reckon with the generic background of both.

It has been astounding to note, under such conditions of experiment, to what a degree definite self-contradictions can be determined in habitual social interreactions. It has become apparent that the individual does not suspect in any way the conflicting tendencies he himself is expressing. In our group studies these discrepancies, occurring and observable in the reactions of the moment, are brought gradually to recognition; they are appreciated as the outcome of an artificial and disproportionate position which the individual habitually assumes in relation to those about him. They are not emphasized in their individual and more or less accidental expression but as phenomena of our social inter-

functions generally and in their relation to more outspokenly distorted and destructive manifestations.

We may take for instance the circumstance in which one person makes an apparently direct comment on the performance of another. This comment may carry a sarcastic note or a note of admiring approval and the person addressed may react correspondingly with irritation or with a sensation of pleasure, giving evidence of this in his gesture or facial expression or in some verbal statement. This type of interreaction is in no way unusual; it may occur in one of its shadings in any social setting. Though these phenomena are expressed in specific individuals and in connection with a specific situation, the individual cannot claim them as characteristic of himself, except in their accidental and secondary features. Also, the *motivation* of such reactions, demonstrable in the specific case, is typical of habitual social interchange and is of a generic character. If contradictions and incongruities are found to constitute important elements in such interchanges, they cannot be laid to any particular person or type of personality or specific neurotic state. The individual is only the carrier, as it were, of discrepancies that are in no way of his personal making.

In the above situation, the statement with its undercurrent of criticism or of admiration is directed, in its surface content, toward some other individual; it would express an evaluation of the other's performance or behavior. Under these circumstances the habituations of normal interaction force the individual thus addressed either to react emotionally (with pleasure or displeasure), or to follow the first speaker in his manifest trend and enter into a discussion or elaboration of the matter he has mentioned. But in group-analysis we do not pursue this obvious trend; we return to the undercurrent of criticism or admiration, or whatever the emotion may be. In these reactions the speaker is really giving evidence of his own position; he is disclosing the attitude which in his self-image he unconsciously assumes in relation to his assumed images of other selves. There is indication that this assumed relation is frequently not in accord with the verbal statement, with the appearance that has been given and accepted, that is, with the alleged interest in the objective matter of presumable concern.

On closer investigation the attitude of the individual implied in his social interreactions and mood-undercurrents, proves not only

to be contradictory to the manifest content of his expressions, but it is found also to posit a relation to other individuals and to the environment that is quite out of keeping with a sober and rational orientation. The mood-undercurrent as well as the outspoken emotional response—irritation, for instance, or elation—appears to be expressive of a scheme of fancied relationships, based upon what Dr. Burrow has called *social images*,³ rather than upon actual needs in natural interfunction. Each individual places himself, as it were, in a category different from those about him. He arbitrarily assumes sponsorship over the feeling and behavior of others and in turn accepts them also as arbiters of his conduct. He claims for himself a position of authority and of distinction, though he is actually dependent in his mood upon the acclaim or disapproval of his surroundings. Such incongruities arising from a fancifully autonomous position, though clearly evident in our customary interreactions, are yet not suspected by any of the participants.

Accustomed to the distinctions and classifications of a more descriptive approach, we have a tendency to treat the various emotions, moods and attitudes expressed in social interchange as separate entities and to evaluate them from the point of view of their external differentiations. But everywhere we find tensions due to similarly exaggerated and misplaced demands of a self-image that stands in relation to its own projections. This socially persistent condition may be found on analysis in a great variety of phenomena that belong to the habitual equipment of normal interactions—in complaints, suspicions, and accusations, or in ready agreement, extenuations and affabilities. A less conventionally restricted inquiry would seem to make evident that this social image-tendency activates seemingly widely distant reactions. In the above and in other more destructive social processes embodied in definite mental disorders, we will find that the active agent consists in this same automatically reflected and referred self-duplication.

There is to be considered the further circumstance that the factor of the social image has found an *institutionalized* expression in various fields of human endeavor; for instance, in our standards

³ Burrow, Trigant, "Social Images Versus Reality," *The Journal of Abnormal and Social Psychology*, 1924, XIX, 230

of success and reputation, in the protective elaborations of certain theories and beliefs, and in the competitive program of human activities generally. Every individual participates unconsciously in these phenomena and it would be of interest to investigate in how far many socially stabilized constellations have a sound biological and factual background and in how far they are only an expression of a phantastic and self-enveloped mood-undercurrent.

When the mood-content of social reactions is subjected to systematic examination one is struck by the quite automatic interlocking of mutual mood-attitudes, and by a sort of obsessive interplay that seems to revolve in a vicious circle. What has been considered a direct and outgoing response is now revealed as a complicated social reflex, as a continuous mutual adjustment based upon an ever-present social transference. The position of arbitrary authority which one individual may indicate in his behavior meets an equally exaggerated self-image in the individuals constituting his social surroundings. According to the mutual, momentary constellation there is an automatic response consisting in an emotionally colored reaction of either agreement or disparity. In this way the claims of the self-image of one individual are in constant interplay and mutual corroboration with the self-image habitual to other individuals. Through this attitude credit is given to the mood and to the position which underlie the action of the first person. His position—incongruous though it may be—is accepted as valid and is corroborated through the response it receives. This activation of a state of heightened self-consciousness and of transference resultant upon the expression of the same condition in other individuals would seem to be especially interesting as indicative of the influence of the surrounding social structure upon the individual disturbance and in its bearing upon the genesis of mental disorders.

It is frequently observed that an individual will accept the invalidating meaning of contradictory trends as these occur in the actions of other persons or even in features of his own *past* feeling and behavior. But this does not indicate that there is actual insight into the incongruities of activity as they occur at the moment. It does not mean an appreciation of the self-centered contradictions of the subjective attitude as they are effective in the immediate situation. A real insight, by which I mean an adequate

appreciation and abrogation of phantastically exaggerated trends and contradictory demands, would naturally be demonstrated in the immediate reaction or mood-state. That is, there would necessarily take place a loss or modification of the emphasis, purpose and demand of the response and at the same time a change of the sense of importance or of reality which a reaction contains. If there has not been evidence of such a modification, as expressed through a change of attention, of interest, or of physiological tension, we feel justified in concluding that the so-called insight has been of only an intellectual, theoretical nature and has not touched the deeper strata of feeling and action.

This easy evasion into intellectualizations has made it still more desirable that the group-inquiry be restricted to those interchanges and manifestations which are observable in the *immediate moment*. The question may arise whether the reactions occurring in the moment will furnish adequate data, whether there are not aspects or experiences in the past which also deserve consideration but which fail to come to observation in the immediate moment. A reservation in this regard is certainly most natural, especially in view of our experience in psychoanalysis and the emphasis it places upon reminiscent events. It has become increasingly apparent, however, that the elements which in the past or in any situation outside the immediate group-moment have obstructed a unified and direct function are identical with those factors which are observable in the contradictions and interferences of the immediate social situation. As regards the causal incident we find that the inhibiting influence of a pictorial and moralistic self-awareness is ever-present. For this reason it is the effort of the group-approach to view these causal agencies in the moment, to relate them to a generic social background and not to be concerned with the correction or treatment of their unfortunate sequelæ or later ramifications.

The group method gives to the patient or student the opportunity to take up a thoughtful study of his own internal discrepancies and mood deficiencies, not as conditions that are peculiar to him and for which he can be held morally responsible, but as a matter of much wider social implication. It is not the object of the group study to offer advice concerning objective problems, as for example in the adjustment of personal difficulties. The attention is con-

sistently called back to the social mood-dependence and transference towards others. The emphasis is placed upon the social tendency to a calculating and competitive self-assertion which has led to the individual's state of disfunction with its external maladjustment. The student is left to take up the investigation upon his own responsibility. His ever-ready tendency to depend upon more experienced co-workers and to "confess" or to lean back upon personal concern, is likewise included as typical of the socially pervasive image-transference.

Our findings disclose a more intimate interrelation than is ordinarily assumed between the disturbance of the neurotic or psychotic patient and the behavior that is characteristic of the "normal" individual. If there exist unrecognized elements in our normal interchange generally, and if it happens that these elements are of an identical nature with those that actuate pathological behavior, and further, if these elements give direct impetus to the development of more outstanding mental derangements, it would seem that a reckoning with this circumstance cannot fail to have a practical bearing upon the problems with which we are confronted in the clinic. Accordingly, there is indication that individuals who are disposed to question the adequacy of their own habituations and social interactions and who are inclined towards a healthier outlook, individually and socially, will be interested more and more to take up a direct and controlled examination of the obstructive and destructive tendencies affecting the interfunctions of the community at large, as they are represented in their own moods and reactions also. For such an endeavor it appears necessary to direct investigation toward the mood-undercurrent and toward the discrepancies of our social interfunction as observable in their immediate actuality.

DEVELOPMENTAL AGE.

By PAUL HANLY FURFEY, PH. D.,
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The modern intelligence test technique has been very useful to the clinician. It has enabled him to single out one element in personality and to study it in isolation. Thus the problem of feeble-mindedness has assumed a definiteness it previously lacked.

Everyone realizes, however, that there are many other factors in personality beside intelligence, though comparatively few attempts have been made to study these quantitatively. Yet they are of the greatest importance to the clinician. The testimony taken at the Leopold-Loeb trial focused the attention of the country on the fact that a person might be quite normal as far as intelligence is concerned and yet be retarded emotionally. Yet we have no way of measuring such retardation as we have in the case of mental age.

The writer has been struck by the fact that children show a surprising difference of maturity in their reactions altogether apart from differences of intelligence. Thus two 12-year-old boys may both be entirely normal in intelligence and yet their behavior among their companions may show startling differences of maturity. One may play habitually with older boys, enjoy the standard team games, and his activities may be consistently of a rough, vigorous type. The other boy may play with younger children or even with girls; he may enjoy individual rather than team games, and indulge in a certain amount of make-believe. Evidently these two boys show great differences of maturity and these differences cannot be expressed in terms of mental age.

It was such observation that led the present writer to attempt to measure differences of maturity, in the hope that it might thus be possible to isolate some factor comparable in importance to mental age. For these differences of behavior which show themselves by changes in the type of play, changes in attitude towards authority, changes in attitude towards the other sex, the present writer has ventured to suggest the name *developmental age*.

The first step was to make preliminary study of 35 boys classified into seven groups of five each, the groups representing suc-

cessively increasing degrees of maturity. It was thus possible to pick out 18 traits, such as attitude towards those in authority, types of games preferred, attitude towards girls, and so forth, which should be diagnostic of developmental age. The term was thus defined as the presence of these 18 traits.

The next step was to construct a rating scale so that the traits could be measured quantitatively. In the past rating scales have often been unsatisfactory on account of their low reliability. In this case an attempt was made to improve the reliability of the scale by rating the 18 traits separately and afterwards combining the ratings into one score. It was felt that just as an intelligence scale represents a combination of a large number of test elements so the rating scale would be improved if it combined a number of separate ratings. This conjecture was verified as has been elsewhere described.²

Seventy-five boys whose mean chronological age was 169.50 months, with a standard deviation of 15.54 months, were rated by two judges. The coefficients of the ratings of Judge A with Judge B are given in Table 1. It will be seen that the reliabilities

TABLE 1.

CORRELATION OF THE RATINGS OF THE TWO JUDGES ON THE SEPARATE TRAITS.

Trait	r	Trait	r
A .....	.76	J .....	.60
B .....	.59	K .....	.69
C .....	.56	L .....	.71
D .....	.74	M .....	.80
E .....	.62	N .....	.89
F .....	.78	O .....	.82
G .....	.56	P .....	.85
H .....	.54	Q .....	.67
I .....	.61	R .....	.71
Mean .....			.69

of the separate ratings averaged under .70. However, when the 18 ratings made by one judge were pooled and correlated with the combined ratings of the other judge the coefficient was found to be .89. If the 18 ratings of one judge are now combined with the 18 ratings of the other the reliability of the combination by the Spearman-Brown formula would be .94. This is a very satisfactory reliability for a rating scale.

The results of the ratings furnished a criterion with which it was possible to standardize an objective test. The scale as finally adopted consisted of four tests. In the first of these the subject checked two titles in each of three lists of imaginary books. Some of these titles suggested mature interests and some less mature ones. The second test was a list of 54 play activities. The subject was instructed to read it through and check each activity which he liked. He was then told to read it through a second time and check each activity which he liked *very much*. The third test presented 12 ideas, each followed by three statements. Thus the word books was followed by three statements. *They teach you things, It's fun to read them, You have to study them.* The subject was instructed to check the statement that appealed to him as being the truest. In the fourth test the child was presented again with a list of play activities, but in this case they were in groups of three and the child was to check only one out of each group of three.

This test was given to about 500 boys in four grammar schools and one high school in Washington on May 25, 1925. After discarding some papers as incomplete there remained 450 boys whose ages are given in Table 2. The results were tabulated by age.

TABLE 2.
AGES OF CHILDREN TAKING THE TEST.

Age	N
9	49
10	48
11	64
12	67
13	69
14	62
15	61
16	30
Total	450

Thus it was possible to determine which of two reactions was the more mature. After trying out several systems of scoring the following was finally decided upon. Graphs were plotted and straight lines were then fitted empirically. Finally values were assigned to the items proportional to the tangents of the angles

which these lines made with the horizontal. Evidently these values could be either positive or negative; but to eliminate negative values a constant was added to each. Further details of the scoring system are given in the original monograph describing the scale.³

It remained to determine the reliability and the validity of the scale. For this purpose a group of 60 cases was used and the method of split halves was applied. The results are shown in Table 3. The reliability of .76 is not unsatisfactory in view of

TABLE 3.

RELIABILITY OF THE SCALE.

Test 1 .....	.49
Test 2 .....	.72
Test 3 .....	.50
Test 4 .....	.35
Test entire .....	.76

the fact that the test takes only about 15 minutes to administer. An equally good test four times as long as this would have a reliability of about .93 according to the Spearman-Brown formula.

Two criteria were used to determine the validity—the rating scale and chronological age. Table 4 gives the results for the four

TABLE 4.

VALIDITY OF THE SCALE.

	Test 1	Test 2	Test 3	Test 4	Entire
Correlation with rating .....	.29	.56	.26	.34	.56
Correlation with rating corrected for attenuation .....	.44	.70	.39	.60	.70
Correlation with CA.....	.36	.49	.21	.25	.51
Multiple correlation of rating with the four tests.....					.59

separate tests and for the entire scale. The highest coefficient is .70, which seems to imply that the rating scale and the objective test, test somewhat different things.

An effort was made to determine by the technique of correlation what factors underlie developmental age.⁵ For this purpose a group of boys were given the Haggerty Delta-2 intelligence scale and were weighed and measured. In order to eliminate the

effect of chronological age, this variable was partialled out. The results are shown in Table 5. It will be seen that the correlations

TABLE 5.

PARTIAL CORRELATION OF RATING AND TEST SCORE WITH CERTAIN VARIABLES.
(C. A. Constant.)

	MA	Wt.	Ht.
Rating	-.15	.28	.40
Mean .....	.04	.25	.28
Test score .....	.23	.22	.16

with weight and height figured larger than the correlations with mental age. This fact seems to suggest that the causes underlying developmental age are physical rather than mental.

In order to make the scale applicable to individuals it is necessary to establish age norms. This was accordingly done. Scores were plotted against chronological age and a straight line was fitted to the plot by the method of least squares. Age norms were calculated from the equation. Given a boy's CA and his DA it is thus possible to calculate his developmental quotient (DQ). A DQ greater than 100 means that the boy is more mature than the average boy of his age. The reverse is of course true for a boy with a DQ under 100.

In order to illustrate the effect of DQ's of varying sizes, the following series of cases is presented. It illustrates successively increasing DQ's from Charles with his DQ of 66 to Robert with his DQ of 141.

CASE I.—Charles was aged 14-11 at the time he took the test. His DA was 9-11 giving him a DQ of 66. Physically he seemed entirely normal. A physical examination some 18 months before had shown no defects except a slight acne and he was about the average weight and height for his age. His intelligence quotient by the Stanford-Binet was 106 and three group tests also showed that he was slightly above the average mentally. He had always done entirely satisfactory work in school. To summarize physical and mental tests had shown him to be a thoroughly normal and healthy boy, perhaps a bit above the average in body and mind.

It is only when we begin to study Charles' personality and his adjustment to his group that we begin to detect a type of abnormality not revealed by ordinary tests. The boy was extremely effeminate. He never played the standard group games, baseball,

football, basketball, with the other boys. He was stigmatized by his companions as a "sissy" and somewhat persecuted. The only recreational activity which he shared with his fellows was scouting, in which he took a moderate interest. Until out of grammar school he frequently joined in the childish games of the tiny girls living on his block. He had only one close friend at school, Ralph, whose own DQ of 88 shows him to be well below the norm.

It is felt that the present scale of tests for developmental age may be helpful in diagnosing cases of maladjustment like Charles'.

CASE 2.—The adjective most frequently used to describe Philip by those who know him was *childish*. For although group intelligence tests showed him to have very superior intelligence, although educational tests showed him to be some four years advanced beyond the average of his age, although he was distinctly taller and heavier than boys of his age and a physical examination showed only minor defects, Philip was distinctly immature in many of his ways. Instead of playing the conventional games with other boys of his age, he loved to tease them, taking their hats or calling them names until they chased him away. He talked loftily about becoming a foreign missionary; but his actions did not mirror this same generosity and desire for self-immolation. When confronted with a fault he shifted the blame to someone else. He was naturally not very popular among the boys at school. He continually begged and teased for privileges. He joined the scouts and was usually a center of trouble; for he liked to create a disturbance rather than to take part in the activities. He loved to attract attention to himself by his antics.

In view of these facts it is not strange that, at the age of 12-6, his DA should be 9-10, giving a DQ of 78. Philip is an example of retarded personality development.

CASE 3.—Martin was an example of all-round retardation. His Stanford IQ was 78—a result confirmed by various group tests. When he was in the eighth grade a Stanford Achievement Test revealed a retardation of two years. He was markedly below the weight and height norms for his age—about 20 pounds and three inches respectively. A physical examination revealed lung trouble and minor defects. He took the test for developmental age at the age of 16-5. His DA was 13-9 and his DQ was 84.

Martin was the child of a rather neurotic mother. In the opinion of a psychiatrist who studied the case rather carefully, the child acquired many of his traits from her. He had a very noticeable speech defect and was timid and repressed. He seldom played team games, and when he did play them it was with younger boys. He enjoyed scouting. He liked to draw and hoped to become an

artist. He was teased somewhat by the other boys; and his teacher in school often became impatient with him. The whole clinical picture confirms the test result.

CASE 4.—Frederick took the test at the age of 15-3 and obtained a DQ of 93. He was a very healthy boy, a physical examination being entirely negative except for a slight phimosis. He was a bit over the height and weight standards for his age. His intelligence was markedly above normal. A Stanford-Binet yielded an IQ of 120. He did well in school.

Frederick showed an entirely healthy and normal play life. He played the standard team games enthusiastically and well. He was moderately popular and a member of a well-developed gang. He had, however, moods in which he would sulk and shut himself up with a book. These would alternate with wild outbursts of animal spirits. The only thing that stood between him and popularity with the other boys was his habit of teasing and plaguing them. Sometimes he would become insupportable. He showed distinctly neurotic trends at such times, but these were only minor incidents in what was otherwise a very normal and healthy life.

CASE 5.—David's IQ and his DQ on the present tests were 106. The Stanford Achievement Test showed that he was about a year and a half advanced educationally when he was in the seventh grade. A physical examination was quite negative except for phimosis, and in height and weight he was a trifle above the norm.

David was an outstanding athlete even at the age of 13-6, when he took the present tests. He was also distinctly a leader among the other boys. In a club of which he was a member, he was a leader both in the serious activities of the club and in disturbances. He was a talented amateur actor even at this age. He had begun to show an interest in girls, and his eighth grade teacher found him somewhat difficult to control. He rather looked down on grammar school children as immature, and he did not like to be with them. Many of his associates were much older boys.

David is typical of a healthy, normal American boy, a leader both socially and on the athletic field. His faults were the faults of excess of energy.

CASE 6.—James was a remarkable case of accelerated development. His degree of intelligence amounted to pure genius. At the age of 12 he was 5 inches above the norm for his age and height and 30 pounds in weight. At 13 he took the Stanford Achievement Test and was at least five years and a half accelerated educationally.

The boy's acceleration in DA was much less remarkable. He took tests at 13-9 and obtained a DQ of 116. At this time he was just outgrowing his interest in the boy scouts, in which organization he had advanced to the rank of first class. He played the standard team games well. He was also still interested in rough free play and was just relinquishing his interest in marbles and roller skating. Other interests showed more maturity. He read scientific books with avidity. He used to perform remarkable experiments with odd chemicals and bits of machinery in his cellar. He showed no interest in girls.

CASE 7.—Joseph at the age of 12 had a DA of almost 15 and a DQ of 122. He associated habitually with a group of boys much older than himself. His games were predominantly of a vigorous, active type—baseball, basketball, football. He has played all these three games not merely informally as younger boys do but as a member of an organized team which is distinctly characteristic of the older boy. He still enjoys playing with his electric train. But most of his time goes to his gang. He has a punching bag and would like to be a boxer.

CASE 8.—Robert is a remarkable case of accelerated development. At the age of 14 he had a DA of 19-9 which gave him a DQ of 141. His physique is adult in almost every way. An X-ray photograph of his wrist bones was pronounced by an expert roentgenologist to be typical of a young adult.

Mentally Robert does not show the same acceleration. Psychometric tests show him to be slightly retarded since his Stanford IQ is 92 and the National Intelligence Test yielded an IQ of 79. He is in the seventh grade.

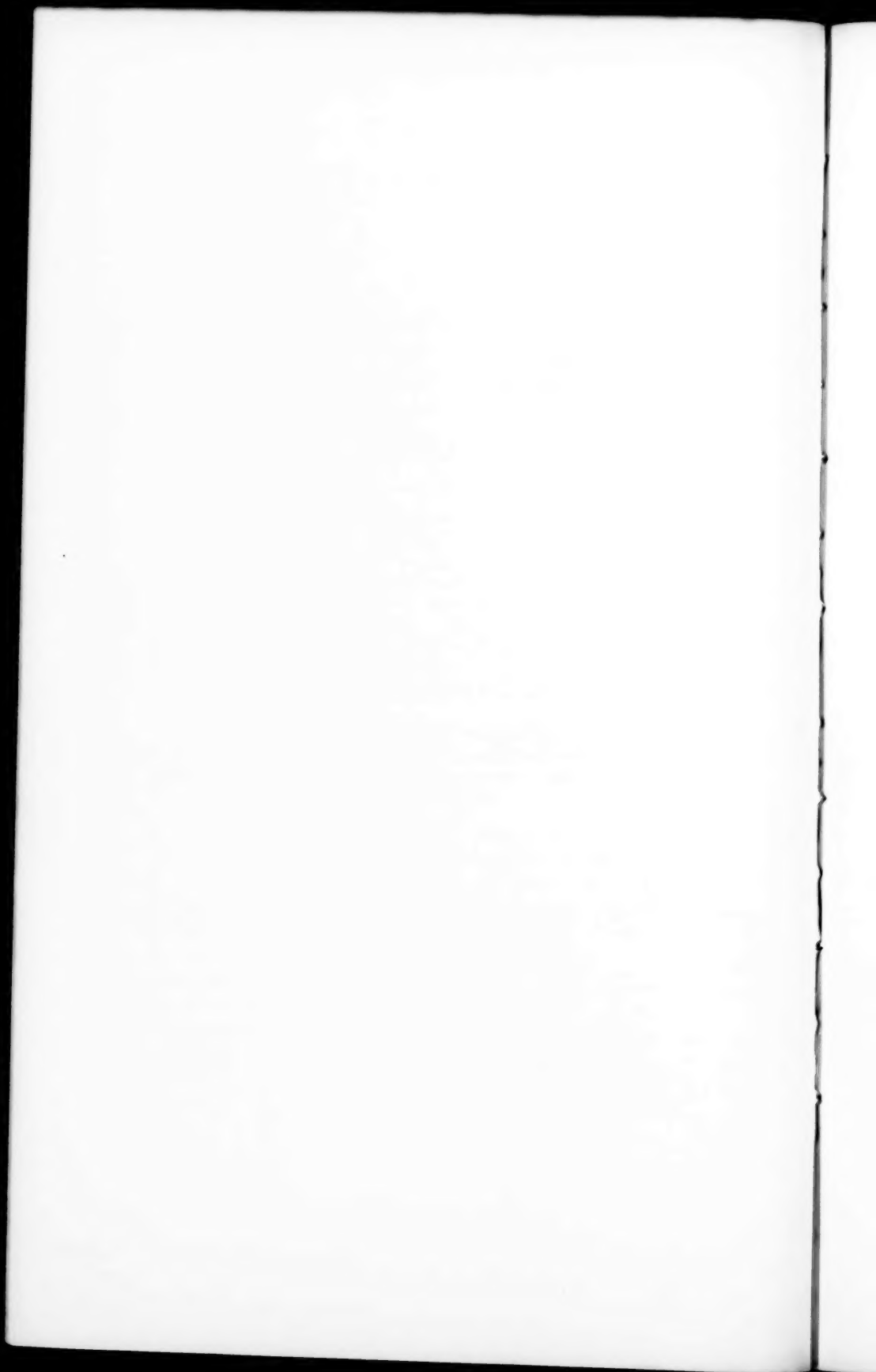
The type of play which Robert prefers shows very striking maturity. He is a member of a gang which averages much older than himself. This group is particularly interested in athletics and predatory activities. It regularly organizes athletic teams—baseball, basketball, football, according to the season, and, naturally, Robert is one of the shining stars. In off moments the gang worries the neighbors, plays poker, and snatches a fearful joy in smoking cigars.

The above series of cases will perhaps illustrate the fact that developmental age implies a quite distinct type of maturity from growth in intelligence of bodily growth. And just as mental age is of vital importance to the teacher it may be that developmental age will prove very important for the clinical psychologist, the student of delinquency, the recreational leader, and others who deal with the

child outside his school hours. In a study elsewhere published the present writer⁴ investigated the factors influencing the selection of boys' chums and found that chums' mental ages correlated with each other on a special formula¹ to the extent of .24 while the developmental ages correlated .37. The difference between these two coefficients is possibly too small to be very significant, yet it illustrates the importance of developmental age as a factor in the social life of the child. It is felt that the concept of developmental age is a fundamental concept in child psychology and that the present tests are sufficiently promising to justify continued work along the same line, while even in their present form they may not be without some practical value for those who have to deal with the social side of child life.

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PSYCHOPATHIC PERSONALITIES AMONG BOYS IN A TRAINING SCHOOL FOR DELINQUENTS.*

By G. E. PARTRIDGE, PH.D.

The primary purpose of this study was the identification and investigation of cases of psychopathic personality in the population of a training school. The project is a part of a program of orienting studies of this type of mental deviation. It was also a part of a clinical service in psychiatry and psychology, and the selection of cases that were presented to the clinic was chiefly determined by the fact that these referred boys were regarded as especially problematic in the school. The population of the school is about two hundred and fifty. The first fifty cases do not necessarily nor probably include all those who would in any systematic investigation be regarded as psychopathic, and do include, as we shall see, many who are not.

PSYCHOPATHIC PERSONALITY.

Psychopathic personality has not been distinguished as a homogeneous reaction or development. That is, we do not recognize any single tendency nor any necessary and sufficient background of trait or episode which is the characteristic feature of this mental deviation or behavior syndrome which we clinically appreciate. There is, in fact, at least to a high degree of probability,

* This is the second of a series of orienting studies of psychopathic personality, the first of which was published in *THE AMERICAN JOURNAL OF PSYCHIATRY*, in May, 1928. It is from the clinical research service of The Sheppard and Enoch Pratt Hospital, Baltimore, which, since November 1, 1927, has conducted a research and service clinic at the Maryland [State] Training School for Boys. Thanks are due to the chief of the service and of the clinic both for general assistance and for more than one idea on the place of the psychopathic adjustment in a general psychopathology expressed here; to Dr. Ives Hendrick, formerly of the hospital staff for studies of two cases of our series; to Mr. John T. Atwood of the hospital staff who has performed the intelligence tests; and to Mr. Harold E. Donnell, Superintendent of the School, and to his staff for excellent cooperation.

no such specific etiology, and no uniform basic tendency, but rather a variety of somewhat different conditions and events which found the chronic states of mal-adjustment which we call psychopathic. But we do see that certain persons establish in early life, before adolescence, very enduring behavior patterns, clearly not normal, but serving the purpose of some relatively satisfying adaptation to the major demands of the individual. So long as desires are satisfied to a degree that is moderately gratifying and do not meet with gross social interference or punitive reaction, we have only a picture perhaps of strong demand and direct modes of immediate satisfaction with attendant slightness of consideration of the future and of the social milieu. This type of behavior we should perhaps not yet call psychopathic; although it is infantile in some of its traits, and does tend to break down and become self-defeating since it makes no good provision for the satisfaction of future desires and develops no means of adequate response to the more complicated demands of a matured environment.

At the point where the direct satisfaction of the more fundamental desires begins to be impossible; at the point where the child or the individual in general who pursues the more primitive plan of acquiring by demanding and taking finds his methods unavailing, the essential features of the psychopathic adjustment appear. Defeat or thwarting is met by such procedures as: (1) Attempts to dominate situations by displays of anger, by threats, violence, "tantrums," with development of antagonism towards the thwarting persons, ideas of injustice, and the like, resistance to authority; (2) attempts to dominate and influence, by displays of the reaction of hurt, helplessness, sulks, with the development of the whole mechanism of attention-attraction, sometimes the production of the invalid reaction in some form, the persistence of the attitudes included under the term "inadequacy," and the relation of dependence; (3) the attempt to regulate the relation of desire and accomplishment and the pressure of demands upon the individual, by the reaction of running away, which thus serves a double purpose—escape from obligation or responsibility or demand, and change to an environment which may offer more direct satisfaction of desires: a type of response seen in vagabondage, and perhaps in alcoholism and drug addiction. It is these

reactions which, in well-matured forms, we see among the psychopaths who carry their ill-adjustment to the point where they become burdens to a wider or narrower society, or who fall into some definite mental illness, chiefly from the severity of the opposition which they meet.

This, briefly, is a description of the psychopathic reaction and development at the manifest behavior level. It tells us nothing of the underlying conditions or mechanisms. But it at least brings into view the three main characteristics or moments of the psychopathic process, which become for us *problems*, for the solution of which we may at least bring to bear, even now, some significant facts: (1) The psychopath is distinguished, in general, by an excess, either of general or specific demands. He wants much, and it is the insistence and persistence of his demands that is one of the chief sources of his conflict with society; (2) he fails to "advance considerations of the future" in the attempts to satisfy these demands; fails to develop the controls, considerations and loyalties to persons and principles which in the average person check the free application, upon environment, of demands; (3) he reacts with types of behavior which are peculiar to him: tantrums, sulks, runaway. These are presumably not unrelated to one another, but are distinct features which in any individual require, and theoretically may receive, explanation in terms such as the psychoanalytic, or any other genetic concepts which are adequate to describe conduct.

It is plain that we do not thus understand the psychopath, but at the same time we are not without valuable clues. Some of these come from the achievements of psychoanalytic methods, which at least provide us with general concepts in terms of which we may provisionally and as a working hypothesis interpret the essentially psychopathic development. Notoriously the psychopath has eluded analysis in the strict sense. The urge to cure or reconstruction does not enter into his realm of desires. He has generally rationalized his conduct so that he accepts himself well, is pleased with his manifest attainments and methods, so that we may say that the psychopath is one whose conduct is satisfactory to himself and to no one else. He does not recognize deficiency, and attributes his failures to others. The psychopath is never known to seek psychological treatment—at least not for his psychopathy. In his

"pure" state he is, therefore, unanalyzable. But owing to the "non-specificity" of mental disorders, we do find that analysis of cases which have psychopathic coloring or psychopathic features helps us, and occasionally a psychopath who has produced a psychotic reaction may become more productive thereby, and reveal characteristics, such as inferiority motives, which he would otherwise conceal and protect.

Briefly, and only for the purpose of suggesting the scope and incidence of problems, we may mention some points at which psychopathic trait and psychoanalytic approach are in some relation.

The psychopath is characterized by the excessive ardor of his demand. This may be of a general nature, and we see a demanding, never satisfied person. He may appear as a person of special interests or desires; we see psychopathy in which the conspicuous feature is the concentration upon some passion—this may be some erotic demand, demand for perverse satisfaction; it may appear as alcoholism, drug addiction, gambling, wandering, acquirement of objects (stealing), mechanical interest—revealing both the characteristics of the fundamental desires and the adjustment. At some of these points we have at least some data of interpretive value. We can sometimes find the oral trait behind alcoholism, there are some clues to the psychology of gambling, at least in individual cases, and we know something about the formation of the perversions. In all we may find early "fixation." The restlessness and excessive demand of the psychopath which we see to be a somewhat generic background of the psychopathy, we have some reason to believe to be related to situations in which oral demand is affected. Whether native excess of oral demand may occur we do not know, but there is at least a fertile field for exploration in the relation of either excessive satisfaction of oral demand or deprivation in this sphere, to the early appearance of the specific and the general excess of demand which the psychopath tends to show.

The psychopath, secondly, fails to produce in his handling of the environmental situation or by reason of the unfavorable nature of the environment itself, those attitudes which favor the progressive adaptation to other people and the controls and the ideals that are necessary for sustained effort. He is in general "narcissistic" and in the individual we need to seek the origin of that

narcissism in the whole setting in which he has handled the problem of adjusting himself to his social milieu. In some way he becomes anti-social. He develops inferiority feelings and antagonism to authority. He may want attachment to others (lack affection). Here we see perhaps too much to be useful in the interpretation of the individual case. At least in many psychopaths we see later signs of a grossly deviated handling of the "Œdipus" situation. There is very often marked antagonism to the parent of the same sex. We see marks of the "castration" complex in the inferiority and the antagonism and the sense of injustice and the complaint and to some extent in the demands of the psychopath. In his deficient "moral sense," his "moral imbecility," his lack of self-criticism and of sense of guilt, his tendency to blame others, the imperfect development of the "super-ego" comes out; although here the picture must be so varied that the general fact such as this cannot be very useful to us. But the psychopath will be found to lack both the goal idea and the check upon the demand which we associate with the normal "super-ego" development.

The later reactions of the psychopath, the adaptations which characterize him finally as a psychopath may be fully represented or contained in what has appeared very early. These reactions may be selected, differentiated, reinforced in ways that are not so represented. Lacking the fundamental analysis we can only be too speculative in this later problem. But the emotional instability, the adjustment by evasion through invalid reaction and abandonment of effort, are all analyzable responses, at least in theory.

We may accept as a working hypothesis that the psychopathic reaction is a non-specific reaction or syndrome of reaction tendencies that are not likely to be found referable to any one uniform and homogeneous trait or trend, much less to any single episode in the career of the individual, but which constitutes essentially a mal-adjustment in all probability based upon the very early mishandling of the well-known situations in which deviations of many kinds may be supposed to develop.

With this brief orientation in theory we may consider the fifty cases which we have examined with reference to the incidence of these processes which we call psychopathic.

PROVISIONAL CLASSIFICATION.

It is not at all probable that any two examiners would report precisely the same classification of these fifty cases. There are unquestioned psychopathic tendencies in some cases that we have placed in the "normal" group. Among the psychopaths there are degrees and qualitative differences that shade over into the normal. Particularly the distinction between the "unstable" borderline or mentally deficient showing persistent bad behavior and the developed psychopath is not easy to draw. There are psychoneurotic signs in cases that we have not called psychoneurotic. There is inferiority in a number of cases that might be called constitutional. But as judged by the dominant characteristics of the cases our distribution appears to us justified. It is as follows:

Not discovered to be abnormal.....	9
Mentally deficient	12
Borderline intelligence (I. Q. 70-73).....	5
Psychopathic personality	12
Post-encephalitic	2
Traumatic	1
Psychoneurotic	1
Constitutional inferiority	1
Unclassified	7

 50

THE "PSYCHOPATHS."

In the group of psychopaths we have placed provisionally those boys who show in their histories and on examination those tendencies, which we have previously described as constituting the psychopathic personality: those who reveal persistent reaction-tendencies, somewhat independent of immediate environment, which show as general incompatibility, or inadequacy or chronic delinquency.¹ Since the population from which the cases are drawn is already selected with reference to a trend towards chronic delinquency the presumption might be that we might find a large incidence of psychopathic tendencies and also that our line of demarcation would be indistinct, which is indeed the case. The picture of psychopathy fades out inevitably in these cases in more

¹ See the report in THE AMERICAN JOURNAL OF PSYCHIATRY of May, 1928.

than one direction: towards the "normal" adolescent or pubertal instability; towards the general inferiority which includes a low grade of social and moral adjustment; towards the inhibition defect that may accompany mental inferiority or deficiency, and the tendency of the low grade in every way to act excessively according to the pleasure principle.

Below there is given in the form of condensed case studies the main features of the psychopathic cases.

CASE IX.—Age, 18.

Problem.—This boy has been a behavior problem for at least five years. The history of his early life is not complete, but there is evidence that he was indulged by the grandmother with whom he lived, and that he was hard to keep in check. On returning to live with his father, he soon became hard to manage. He ran away from home several times, took the family cars on these trips. The later history is of a series of escapes from institutions in which he was placed. On one occasion he was implicated in the theft of a car that was not the property of the family, and for this he was sent to the third training school. When he was fifteen he was married to a girl of seventeen. He became sexually promiscuous when he was about fourteen.

Family History.—There is nothing very significant in the history. Grandparents appear to have been normal people so far as is known, and the father is a successful surgeon. The mother died of pneumonia when the boy was an infant. One uncle, paternal, is a ne'er-do-well and drinks. The father remarried and there are two children by this union.

Personal History.—After the death of his mother, the child went to live with his paternal grandparents, and was there until he was about eight, when the grandmother died, whereupon he went to live with his maternal grandmother. At thirteen he had become so difficult that his father was asked to take him, and he went to live with the father and step-mother, having seen the father but a few times since his early childhood.

The history of childhood is pieced out from statements of the father and the boy himself. He says that he had a happy childhood, that he was active, and enjoyed life out of doors. He had a pony and bicycles, went about with other boys. It is said that he always chose older companions, those of a lower class whom he could dominate. He admits playing "hookey" from school a good deal while he lived with his maternal grandmother. He can recover no memories of sexual experience of any kind, he says, during these periods, but the father states that he had already had sexual relations before he came home to live. A story that he shut his grandmother up in a corn crib and kept her there until she would give him money, he denies.

After he went to live with the father, the real delinquency began. He thought that the father neglected him, and he ran away. For a time he would not eat at home, but would get food charged somewhere. He broke into a store of a Greek who, he said, owed him money and wouldn't pay it. He became so difficult that he was put into a training school, where he was

kept, with some intervals of absence, for about three years. He was sent to a military school, and ran away within a few weeks. Sent then to another training school, he escaped from there after some months, and was arrested for taking a car. This got him into a third training school, from which he escaped three times. In the school he did not adapt very well, did not make friends, and was generally disliked by the other boys, probably because he criticized and interfered. In all there is a history of seventeen runaway episodes, during the five years.

Observation of his behavior over a period of two weeks showed some marked characteristics. He was restless both in interviews and under restrictions of his liberty. He had many demands to make, was impatient, very suspicious of the intentions of others, eager to know what was thought of him, balky at every turn, and determined to have his own way in small things in the face of odds and great disadvantage to himself, quite ready to sacrifice a promising outlook for a small immediate gain. When thwarted he was defiant, and once displayed extraordinary resistance when he was forced to do something. He showed poor adjustment to people of the environment, wished to mingle but seemed always a little aloof.

He was very reticent about himself, but in small contributions gave some glimpse of his inner life and his mental history. He had some fears, always had fears in regard to dead people, was afraid to go to bed alone, slept with his grandmother until he was thirteen. He has always been restless and sensitive. He has been disturbed when boys called him names, such as "cocky" (something about his glasses). He talked some but not freely about his sexual life, admitted sexual promiscuity, but denied all homosexuality. Masturbation began when he was fourteen, was practiced infrequently, and he said it was not nice to talk about. He has suffered some from homesickness, was homesick when he was at a military school when sixteen, and says he missed his father. He admits being sensitive, and that he is sometimes violently angry and has done injury to people in anger. He spoke of some rash behavior, such as once throwing a match into a gasoline car. He dislikes to take orders, in general, likes to be his own boss. On the whole, he says, he has been happy. He has had some fear of being in high places. He told about the boys laughing at him when he played baseball, because he struck at the ball, they said, after it had hit the mitt. His greatest admiration is for boys who are athletic, and his own best ability is in running. His ambition is to have a stock farm and raise horses, and to be a lawyer. He thinks he would be perfectly all right if he were left alone, and he thinks his father ought to have spent more time with him, ought to have made him stay at home.

Examinations.—He is rather attractive in appearance, well built, muscular, below medium height. There is no physical defect but at the time of examination blood pressure was low: 100/60, and pulse was 48 per minute. Intelligence is normal; intelligence quotient as measured by the Stanford Revision was 86, with one failure each in xii, xiv, and only one success at xvi. In the Army Alpha the score was 116, Group B, intelligence quotient 106, his quickness here being to his advantage. General information was good. There

were no indications of any mental deviations such as hallucinations or delusions.

Here we have a boy who is regarded by people accustomed to deal with behavior cases as wilfully bad and a menace to society. It is feared that he will sometime commit serious crimes. A court is willing to regard him as a normal boy, and his father, a physician, regards him as sound in body and in mind. A psychiatrist who examined him saw little the matter with him, and two psychiatrists who examined him with reference to committing him were not willing to do so.

The case is of much interest, therefore, as a question of psychopathology in its relation to criminology. Is this boy of unsound mind? He was diagnosed as a case of psychopathic personality by a hospital staff.

The appearance of the boy is normal but we notice difficulties as follows:

Early fears and persisting aversions such as to being in high places. He was afraid to sleep alone up to the age of 11 or beyond.

Tendency to adjust always at a lower social level, to seek companions whom he could "boss."

Truancy.

Early tendency to be insistent in demands (reported but not verified).

Marked reticence, unwillingness to talk about his problems.

Extreme sensitiveness to any criticism.

Eagerness to know what was said about him or done with reference to him.

Suspiciousness and doubt of the good intentions of people toward him.

Difficulty in social relations, eagerness to participate, but tendency to hang about the border.

Great restlessness.

Complete balkiness over trivial matters.

Unwillingness or inability to wait for issues.

Willingness to sacrifice great future advantage for the sake of some present minor good.

Running away from difficulties.

Sensitiveness to pain, or fear of pain.

Sensitiveness about his personal appearance.

Much looking into the mirror.

Many demands and great impatience.

Lack of consideration for the desires of others.

There can be nothing but speculative interpretation of the subjective development of his difficulty. The evidences of feelings of inferiority or insecurity are of course very numerous. He cannot tolerate either understanding or control of his behavior by others. He has apparently no conception of a future for which he will sacrifice present demands. His defensiveness about the sexual life indicates that there is something amiss there, but what specifically the history is is not known. The restlessness, discontent and running away show that he is ill-adjusted in a variety of situations that appear on the surface to be suitable for him. The most striking features are: Inability to advance considerations of the future, devotion to the present desire to the remarkable exclusion of what would seem attractive future satisfactions; extraordinary resistance to authority; inability to adjust to others; and his reticence. His delinquencies seem to be secondary to his general incompatibility.

CASE XXVIII.—Age 18.

Problem.—This boy has always been in trouble over little things, as far back as he can remember. Truancy began in the early days of high school. Stealing is more recent. He has been sexually promiscuous since he was sixteen, associating especially with show girls and dancers. He was difficult to manage at home. In June, 1926, he ran away from home to New York. There he led a fast life, lived in sexual relations with both men and women, participating in perverse sexual activities for compensation, served a term in the reformatory on a charge of taking an automobile. When he returned home he hung about cabarets, stole, probably to the amount of two thousand dollars, entering apartments by chiselling doors.

Family History.—We have not much family history. The father is a high salaried man, who used to drink some. The boy states that most of the people on his father's side are hard. He says that his father is absolutely selfish, and that the father and mother argue, the father appealing to him sometimes to corroborate his statements, and the mother believing that the father does not give her enough money.

Personal History.—He is an only child, and was reared in a home in which there was much stress. He remembers the harsh treatment given him by his father when he was two years old: his father then burned his fingers with a match when he took a penholder from a bank. He was always greatly afraid of his father, who used to strap him when he talked back. The

father has always been stern, but despite his father's faults he always liked him. The mother who was not high tempered treated him as a baby, and was always kind to him, and he was affectionate toward her. The father would get into rages.

The boy's own idea is that when he once got a chance to be free he broke loose. He thinks of himself as having been a mischievous boy, but not bad. He learned masturbation when he was 12, a boy showing him and also doing it to him. He thinks he is strongly sexual, has been much with girls, has been in love with four or five girls, including an actress with whom he lived for a month in New York. He indulged in a variety of practices in New York, taking the active rôle in fellatio, and indulging also in intercourse. He never did much drinking. He thinks of himself as always having been very nervous, excitable, high-tempered, generally happy, but since twelve likely to have feelings of depression.

Examinations.—In appearance this boy is quite normal. He is of average height, five feet seven and a half inches, weighs 143 pounds. He seemed frank, had a somewhat pleasing manner. Except for a slight facial acne there is nothing amiss in the physical condition.

He is of normal intelligence, but not highly endowed. The intelligence quotient as determined by the Stanford Revision test is 98. In school he has gone as far as the second year in a city high school. He seems to have done no remunerative work except that he worked for a short time in a stock room and has served occasionally as a motion picture extra. He has always been of a mechanical turn of mind.

How deeply psychopathic this boy is we do not know entirely. He is to some extent anti-social, the indication is that he is pretty well established in a criminal career, and it seems certain that his attitudes are based upon personality traits that were founded very early. The antagonism towards the father is the most conspicuous feature, and his reactions of retaliation as a compensation for sense of injustice and fear and inferiority feeling inspired by the father appeared in early childhood, when to pay his father he retaliated by sly reprisals such as hiding articles that his father would need. The mother's attitude toward the boy, though not so well known, betrays qualities that strongly suggest the presence of situations in early life that laid the foundations for psychopathy in the sexual sphere. We should regard him as a psychopath of the chronic delinquent type, with some sexual psychopathy and with marked tendency towards the runaway reaction.

CASE I.—Age 22.

Problem.—The facts about this case were difficult to obtain, because of the boy's lying, but are approximately these: He began taking things when he was a child; having no toys of his own, he took others'. At twelve he

and another boy stole a wagon and for this got into court. He was sent to a training school later for taking post office orders from mail boxes, and states that he took in all \$1700.00 in this way. He escaped from the school. Again he was arrested for entering a store to steal a radio. He states that as a school boy he played truant much, and that he rang in fire alarms. He did some hoboing. He was arrested for stealing a sweater, and sent again to a training school.

Family History.—The boy's statements about his family are conflicting, but the most believable is that he is the son of a locomotive engineer, and that his mother was a widow when she was married to the patient's father. He has three brothers and two sisters and a step-sister. The father and mother quarreled. The mother, in his story, is selfish, and the family situation was so bad that the boy separated from the family at the age of about fourteen or fifteen.

Personal History.—The history cannot reliably be put together from the available data. He thinks he had a "couple of spasms" and he had pneumonia when he was four or five. He had appendicitis about two years ago, and it is in the history that his leg was broken in an automobile accident. He states that he was in the 7th grade when he left home. He went to Norfolk and did odd jobs, then was in Stanton Academy, his father having given him some money for his education. He left before he should be expelled, and following that worked as a delivery boy, ambulance driver, and carpenter. He enlisted in the army in August, 1927, and after three months deserted. Just how, chronologically, the history of the delinquency fits into this is not clear. He states that he was about twelve or so when he did the stealing of money orders, that he has been in juvenile court many times, and that he has done house-breaking perhaps seven or eight times. The family, he says, has not known his whereabouts for about two years.

His story is that he was all right until he got into bad company, and that he began to play hookey from school at about ten, and that he began to lie after he got into trouble. It was at the age of ten that he got in with a boy who stole and who taught him both to steal and to play hookey. He says that he has stolen everything imaginable, and that he doesn't think, but will be going down the street and will see something he wants and will take it. He used to have a way of getting out with a week's order of groceries from the store without paying.

His sexual history is obscure. He denies all homosexuality. In the first interview he denied all masturbation, said he didn't have time to think of such things, that his mind didn't run that way, but he later admitted masturbation. He dates the first heterosexual experience at about sixteen, speaks of having had intercourse frequently, but is vague about it, says that it was practised in groups of boys and girls. On one occasion some boys were enticing a girl and he was supposed to have told, and as a consequence the family moved in order to protect him.

His account of the family situation indicates that there was much sensitiveness on his part. He has strong resentment towards his mother, thinks she likes him less than the other children, and that she was considerate only

of the step-sister, says that she threw things at him, that when she asked the father to whip him his father would pet him. His sister-in-law he likes because she hates his mother. He loved his father.

He makes such statements about himself as that he was always happy, had no fears, was not nervous, that he believes in an "eye for an eye," etc., that if a dirty turn is done to him he would like to do one back. He emphasizes his stealing, brags somewhat about being hard, the hardest boy in his school, etc., and says that the teachers were afraid of him. He says that he does not care much for women, that he never had good friends and doesn't like to associate with others much, that he drifted from one gang to another, was never a leader, that his father moved three times in order to get him away from the crowd and that he never had a steady girl. He says his father warned him not to go too far with women, that the worst thing he ever has done was having intercourse with girls, that it ruins one's health. He admits a little gambling and drinking. He thinks he does not have much patience, likes a job he can get done. He is reticent. As to whether he thinks well of himself he doesn't know. Once in a while he feels desperate, like killing someone, and it is plain that he has some grievances against boys of the training school. He thinks he has made four or five enemies by not being able to stand bulldozing, and that one boy at the school has turned against him. It is hard to get him angry, he thinks, but when he is it is hard for him to cool down. He thinks he has done nothing very bad but that he might do better: he quarrels a little, makes a little fuss, gets into arguments, swears once in a while, once in a while lies, tells some yarns and lies to cover up things. He thinks that there are lots of boys one cannot get along with, some think they are better than anyone else, some are too foul-mouthed.

In the examinations he showed a peculiar manner. He seemed defensive, but at the same time evidently had some pleasure in controlling a situation by lying. He smiled much, wriggled, intimated he had something to tell that he could not disclose because it would involve others, and told a large number of improbable stories, among them these:

That his mother made statements to him when she was dying that changed his life;

That when the mother died two years ago, his brother had to lock him up in his room to keep him from killing himself, he felt so bad (both parents he later admitted were living);

That his mother worked for the government twenty-one years as interpreter, spoke six or seven languages, including Chinese, Japanese, Italian, and Latin; and that she was born in Tokio;

That there is property coming to him from his mother's estate, a house worth about \$18,000;

That he invented a stop light which failed to work just because of one thing;

That he made four or five boats, one as long as the table which had everything on it the Leviathan had;

That he was given \$100.00 in an envelope for saving a child who was burned, and that he kept the envelope in his pocket for several days before opening it.

There is nothing complete in our study of this boy, but he seems an interesting case for preliminary consideration. The evidence of antagonism towards the mother is sufficient and his statement that his mother would not give him toys, and that he would take toys from other children and not return them seems to have some explanatory power in the case. His great defensiveness and the various hints he throws out about his poor social adjustment indicate an important degree of sense of insecurity. He uses his method of fabrication to gain attention and prestige. His erratic story of his sexual life does not give us a distinct picture, but enough to indicate that he is badly adjusted there as well as elsewhere.

How the chronic delinquency of this boy is related to his feelings of inferiority and under what circumstances he developed his remarkable fabrication is not clear. He is essentially of the runaway type, his fabrication being, in type, reaction of evasion, although there appear to be other motives in it.

CASE IV.—Age 17.

Problem.—With three fellow students in the academy he attended, he was absent without leave, and was implicated in taking an automobile. The boys intimated that he was nervous about leaving, so he took the initiative in doing something more reckless. He was in training school once before, sent by his mother because he was "incorrigible." He insisted upon taking the car to go on trips, to be with girls. In the training school there was one sexual episode with another boy, and he made in general a poor social adjustment in the school. In the school work of the institution he has shown some tendency to be sneaky, is effeminate, is called "Pansy" by the boys, tries to make out that he is more than he really is.

Family History.—The father died when the boy was two years old, and his mother remarried when he was about twelve. Previously he and the mother had lived with an uncle. There were seven maternal uncles, none of whom ever was in trouble like this boy's. There was jealousy between the step-father and the boy, and they did not get along well together. Except for a sister who died when she was a year old the patient is the only child of the family.

Personal History.—He was a bottle-fed baby. He was somewhat subject to upsets of the stomach, is fond of sweets. He was petted by his mother, and slept with the mother until her remarriage, and has done so even recently since the death of his step-father. He dates the beginnings of his trouble to the period after his step-father's coming, when he got in with the wrong crowd.

The boy's own description of himself shows that there is marked deviation from normal personality. He is restless, always liked to talk, is impul-

sive, had a bad temper, but does not think he is exactly nervous. He wants things when he wants them and generally gets them. He admits having been somewhat unhappy, says that he has been something of a disappointment to himself. Sometimes in the evening he is depressed. He is dissatisfied now. He says that ever since he was six or seven, he thinks, he preferred playing with girls, and ever since he was little he disliked getting dirty. No homosexuality is admitted, and an episode reported at the school is explained rather satisfactorily. But he admits being constantly tempted. His ambition is to be a mechanical engineer. He says that he always had a great interest in automobiles, both in driving and fixing them. In the school he likes reading, but is not "so strong" on sports, although he likes to see them. He likes motion pictures, especially society pictures. Farm work he would not do for any price. He says that at times he had good friends and got on well, and again didn't get on so well at all. He cannot take things in the happy-go-lucky way that some can, and he thinks that some people did not like him. He thinks he is all right, except when he gets in with a bunch and is teased about not daring to do things, then he is apt to be very impulsive as on the occasion of the taking of the automobile. He observes that his mother is impulsive too, and he says that his step-father used to tell him about his own early escapades, and he thought he ought to do the same. He was jealous of his step-father. He tells of having had sexual relations with two girls, neighbors, when he was thirteen, and of once having drunk enough whiskey to become intoxicated. He always passed all right in school.

Examinations.—In the examinations he seemed nervous, was much in motion but was very agreeable and friendly. His intelligence is normal—intelligence quotient by the Stanford Revision test is 92.

Here the persisting over-attachment to the mother and antagonism towards the step-father are the most noticeable features. He is restless, dissatisfied, has feelings of inferiority shown in his poor adjustment and his feelings that people do not like him. He has adjusted to these by conduct in which the display motive is prominent. At the present time the depth of his homosexual tendency is not known, but it seems certain that his personality deviations are related to a distortion of sexual development. He cannot be regarded as representing any "pure" type of psychopath. He tends to resort to delinquency as a compensation for his feelings of inferiority, and he evades issues and competition and attracts attention to himself by artifices that are more in conformity with the habit of the other sex. Under very unfavorable conditions he would probably display marked inadequacy and perhaps some form of reaction of invalidism. He is essentially the inadequate type of psychopath.

CASE VI.—Age 18.

Problem.—He is a boy of normal intelligence (intelligence quotient by the Stanford Revision test being 88), who has been practising pederasty for

several years, according to his own statements having done it to 40 or 50 boys. He says he made the discovery that if a boy had masturbated, which he could tell after talking with him, he would allow the pederasty. He has twice been sent to industrial schools on account of this habit; on the latest occasion he struck a boy with whom he was having relations, intending to knock him out.

Family History.—The father who was a wheelwright died when the boy was 17. He was indulgent, but when he discovered the boy's practices, when he was about fifteen, he threatened to break him of it or kill him. The mother who is living was more strict. There is a brother, older, with whom he slept, and toward whom he had sexual feelings without daring to make advances.

Personal History.—The boy seems to have done well enough in school. As a child he was sickly, had appendicitis at about six, later there was a tonsillectomy. He began early to show some feminine traits. He never played ball, and when ten or eleven he was often called a sissy. He liked to play with a girl cousin and adapted himself to her games. He had a marked over-attachment to his father, was fond of staying in the house and doing housework, getting meals to please his father. He was always affectionate towards both parents but seems to have been envious of the mother's closeness to the father.

He can give only a partial account of the history of his sexual deviation. He says that he was first conscious of the rectum when he was given an injection. At ten or twelve, sodomy was done upon him several times by two boys. It was after that that he began masturbation, and he thinks that it was done nearly every day from the age of 10 to 17. He never had any sexual interest in girls. His masturbation phantasies are connected with active sodomy with boys. He worries about masturbation because the other boys think he is a degenerate. He thinks that masturbation has affected his eyes, and he has a strained feeling there. Also there are pains in the heart and difficulty with breathing. He feels as though he were lacking in strength and once recently fainted. He admits his strong interest in sodomy and his struggle to overcome his habit. He insists that he would not do it to "decent" boys. He admits having played the passive rôle but does not acknowledge any practice of fellatio, says that the thought of using the mouth is disgusting to him. He would like to do hard work to get rid of his troubles, but fears getting weaker.

He has a variety of worries and nervous manifestations. He bites his nails, has nervousness if he is punished, worries about his health and about his habit, worries about his mother and his brother. His conscience tells him that he is doing wrong. He speaks of having ideals of kindness. His sexual phantasies are hard to control; he thinks of such things as being with the boys in the woods. There is considerable day dreaming. He notices lately that remarks made by other boys get on his nerves. He wishes to be kept busy, likes to help the cottage master, and shows some interest in helping the officers control other boys. He speaks of having had some strong interests: He liked much to read; wished to be an architect; had

an interest in nature when a child; was much interested in carpentry and drawing, and in collecting minerals and stamps. He is neat and orderly. He occasionally now has uncomfortable dreams: dreams such as of the death of his parents, and his brother. He dreamed recently that his mother was dead.

In the examination he talks rapidly and glibly. He is profuse in his talk about goodness. It was reported that he was given to romancing, that he told another boy a rather remarkable story of what had occurred in the examination. He is called "professor" by the other boys. He likes to be on the side of the officials of the school.

The origin of this boy's personality deviation cannot be determined by any superficial analysis. He is of course deeply affected, is clinging, dependent, and inadequate and unreliable. That he is in danger of developing reactions of invalidism, feelings of weakness and the like is apparent. Whether he might become deeply psychoneurotic or schizophrenic is not so clear. So long as he can make favorable attachments and can by deception of others and himself escape severe reproach and sincere self-condemnation he will probably not fall seriously ill mentally.

CASE XXXII.—Age 19.

Problem.—This boy has some personality deviations of which there is not a satisfactory history. He got into trouble about three years ago with his cousin, who is a bad boy. His story is that three fellows got him to burglarize his uncle's house. He talks in a somewhat moralizing style. Recently he stole some money, having an unusual opportunity, and made his escape from the training school.

Family.—The father died when the boy was three weeks old, and he has very little information about him. There is a sister, older, and a half brother and a half sister. He has heard that the half brother has been killed, but he is not sure of this: he is not interested and he does not care. His mother always got along with him well. He loves her, he says. The step-father he thinks is mean. Of his own father's occupation he knows nothing. His mother would never tell him, but he knows he did a lot of traveling. The step-father drives an engine in the fire department.

Personal History.—He had to leave school, he states, when he was fourteen: he did not wish to but made believe in order to please his step-father. His step-father and he did not get along well together: once his step-father hit him with a board that had a nail in it and since then he has not liked him. He was always well, was not afraid, but admits that he did not voluntarily get into danger. He is sensitive to what people say. Some of his front teeth are out and he says the boys joke about that and make insinuations as to his sexual habits in that connection. Masturbation began at fourteen, accidentally discovered. After that there were a few experiences of fellatio, he taking the active part. Four times he has been with prostitutes. He has

much fear of masturbation, and says that he no longer practices it, that once will weaken one, that it makes one crazy, takes away every time a part of the brain, heart and soul. He never took an interest in girls, he says, until recently he became interested in a girl he doesn't know very well. He hopes to marry a good girl and have children of his own. He admits having depression sometimes: he thinks of home a good deal; once he felt that he could not get along anywhere, and he drank poisoned water intending to kill himself. He has some bad dreams: dreamed of snakes and that his mother was dead; and he sometimes is nervous—it used to get him nervous to hear other boys scolded, he would feel that it was coming to him, even though he knew that he had done nothing. He once had an upset over hearing that an infant had been found dead in a deserted place, recalling that he had seen a man deposit a bundle there.

This boy is a very free talker. His somewhat moralizing talk is not quite in accord with his behavior. He is excitable and nervous, and shows inability to act with judgment under excitement. His vocational interests are in the line of something artistic. He likes acting, also show card writing, and says that he was studying window dressing in high school. He is reported as sometimes feigning fainting attacks when he gets into difficulty.

That this boy, also, is deeply affected seems to us very probable. He shows sensitiveness and antagonism, and he reacts and defends by moralizing, feigning and running away. Outlines are not distinct enough to enable us usefully to place him in any class of psychopaths, but he shows rather characteristic reactions of evasion and running away.

CASE XVIII.—Age 18.

Problem.—We know too little about this boy. He is very secretive, and he is regarded as having pronounced criminalistic tendencies, and probably more of a record than can be verified. He has persistently refused to tell his story, and also objected to an intelligence test. He is willing to recollect being in court twice, once for breaking windows, once when with three boys he took a car for a joy ride. When 16 he was in the navy, but was discharged for bad conduct. There are mysterious lapses in his history.

Family.—The father died when the boy was 10, and when he was 14 his mother remarried. Up to 13 or so his mother beat him some, but he thinks she did not have much trouble with him, and he states that there was not much trouble with the step-father.

Personal History.—From his own account we gather that his interests never ran in the direction of athletics or to reading. He has had gang life, went about with a gang seeking amusement. He likes to play pool. Of his sexual life nothing is known further than his own statement that he has had heterosexual relations beginning at the age of 15 or 16. That he has much antagonism towards authority, and that he has had great difficulty in social adjustment comes out clearly. In the navy he could not get along

with the men on the ship. There were many fellows he did not like, fellows who pick on one. In the school he was defiant; three times he ran away. It was reported that he was all right when he could be leader, but that he didn't react well when he had to take second place in anything. In examinations he was suspicious, apt to be disagreeable, and seemed to enjoy his power of secrecy. His runaways he explained on the ground that he wished to get back to the city, but what he did while on these excursions remains mysterious. It is stated that once when he was outside he turned on the gas, preferring to kill himself rather than be brought back where he would be restrained.

He is a short, rather inferior looking boy, who seems and claims to be in good health.

The psychopathy of this boy is to be inferred from his defensiveness, his attitude towards authority, his reticence, his tendency to run away, his inability to adapt to situations in which he cannot be first. He is asocial if not antisocial, and it is probable that he is deeply psychopathic.

OTHER PSYCHOPATHS.

Details respecting the other five boys whom we have called psychopathic would add little to what we have already said.

CASE XXIII.—Age 12, a Jewish boy, is regarded as very badly adjusted. He has a "Jew complex," has been indulged at home, is reticent, lacks self-confidence. He has strong desires which he has difficulty in controlling in the interest of his future.

CASE XXV.—Age 15, presents a less distinct picture of psychopathy. There is a history of running away, he was in another training school, and was sent to the second school for taking a car. He seems impulsive, is jumpy in his movements, seems self-conscious. It is possible that this boy's ill-adjustment is not very deep.

CASE XII.—Age 15, shows persistent bad conduct, much truancy, runaway episodes, trouble at home with the step-mother, fighting, some social ill-adjustment. He cannot stand having people argue with him. He did not like school and was interested only in the drawing. He shows some signs of nervousness. He dislikes his mother because she ran away.

CASE XLVI.—Age 12, is an interesting boy of good intelligence, I. Q. 110, who is regarded as incorrigible, but whose chief fault is persistent stealing, which began at an early age. His stealing, he states, was motivated by his desire to have as much money as the other boys had. He is a boy of strong interests, has been a busy boy, especially interested in making things. He tells a story of acquaintance with an older boy who persistently offered him money to enter into one sexual relation or another over a long period of

time, but denies that he ever yielded to this boy and states that once when he accepted money he gave it back. This story is not very convincing, however, and it is probable that he is more or less deviated sexually. Although the personality difficulties may center about the sexual relationship, and the stealing be definitely related to that, we have included this boy provisionally in the group of psychopathic personalities.

CASE XLVIII.—Age 15, shows several marks of psychopathy. He stole, fought, ran away both from home and from school, had trouble with his step-mother, with his sister and with a teacher, and he has a grudge against one boy and thinks no one loves him. He dislikes the drill in the school, the doing one thing over and over, was restless in the examination, thinks the cause of his trouble is being bossed about so much. There are signs of nervousness. He admits being very bashful, and that he is sometimes nervous, *e. g.*, when given conflicting orders. There is some suggestion of stammering, he speaks rapidly, says that it is hard for him to get things out of his mind. He would like to travel, does not wish to be a "dumb ox" and stay around all his life.

A brief summary of some of the main characteristics of the psychopathic tendencies seen in these cases will help to construct a composite picture of the group:

CASE I.—Antagonism to the mother, sense of deprivation in childhood, reticence, much social difficulty, compensatory lying.

CASE IV.—Social difficulties, effort to be a "regular fellow," trouble with the step-father, restlessness, nervousness, timidity, sensitiveness, impulsiveness, and strong display motive.

CASE VI.—Sexual perversion, inadequacy, sensitiveness, effort to attract attention, worry, "goody" reaction, ingratiating ways, compensatory lying.

CASE VIII.—Sensitiveness, resistiveness, antagonism towards authority, suspiciousness, secretiveness, inability to adapt to situations in which he cannot be first, asocial tendencies.

CASE IX.—Antagonism to the father, reticence, fears, sensitiveness, restlessness, balkiness, "authority complex," impatience.

CASE XXIII.—Reticence, inferiority feeling, inability to wait.

CASE XXV.—Impulsiveness, nervousness, self-consciousness.

CASE XXVIII.—Restlessness, antagonism towards the father, tendency to adapt at low social level, nervousness, fear of the father, antisocial tendencies, excitability, high temper.

CASE XXXII.—Trouble with step-father, sensitiveness, some depression, nervousness, excitability, moralizing, running away.

CASE XLI.—Social ill-adjustment, trouble with step-mother, running away, inability to endure arguing.

CASE XLVI.—Probable sexual perversity, buying friends.

CASE XLVIII.—Trouble with the step-mother, restlessness, nervousness, bashfulness, desire to be on the go, dislike of routine.

NORMAL CASES.

For purposes of classification eight of the boys were designated normal. It would not be expected, of course, that boys who had been sent to a training school because of delinquency would be found to be entirely free from ill-adjustment and even psychopathic tendencies. The criteria that have been most in mind in distinguishing psychopathic cases are: (1) The presence of a tendency to chronic bad behavior which is not related to current environmental conditions (the more remote in time the apparent causal factors the more weight the chronic bad behavior has as evidence in favor of psychopathy; (2) early establishment of attitudes of defensiveness or antagonism, usually directed towards a parent or parent substitute; (3) feelings of inferiority related to bad conduct; (4) early tendency to evade by running away and the like, and to dominate situations by reactions of tantrums or sulks; (5) excessive demands chiefly appearing as excessive pleasure seeking with a tendency to seek direct modes of satisfaction.

Judged by these criteria no one of the "normals" can be said to be free from all of the symptoms of psychopathy. The following are brief characterizations of cases:

CASE XIII.—Age 16. There is a record of truancy, larceny, trespassing and burglary. He is impulsive, has strong demands, is pleasure seeking, but seems frank and is ambitious.

CASE XIV.—Age 18. He stole small sums of money, was untruthful and had trouble at home, has some authority difficulty relating to women, and wants his own way a good deal. But he has good interests, makes no excuses for himself, has no resentment, does not have a bad temper.

CASE XXIV.—Age 19. There is nothing deserving notice except that rather chronic bad behavior is based upon general low grade endowment plus a bad family situation.

CASE XXXIII.—A boy of fifteen, shows one characteristic often found in psychopathic boys: that is, intense special interest (in this case in mechanical drawing) with tendency to neglect uninteresting school subjects. He came because of incorrigibility, and staying out nights.

CASE XXXV.—A boy of fourteen, with intelligence quotient of 75. He is a fairly well developed boy, but lax in muscular control, somewhat apathetic. He forged some checks, was about poolrooms. The home situation was bad. He seems stolid and unambitious, but states that he has some nervousness, and was afraid of his father. However, no marked personality deviations were found and the environmental factor seemed important in the production of the delinquency.

CASE XXXVII.—This boy is seventeen years old. He was for six months out of school without permission, and there is a history of some difficulty in adjusting to people. He has a strong special interest in machinery, is a pleasure-seeking boy, but he does not seem to be very problematic at the present time, and recognizable environmental factors seem large in the production of his difficulties.

CASE XLIV.—He is thirteen. A somewhat strong play interest and association with bad companions evidently account for truancy and incorrigibility in this case. He is athletic, but there are some signs of nervousness.

CASE XLV.—He is seventeen. He is argumentative and a little defensive, but there is no marked psychopathy. Close restrictions at home appear to account for some of his difficulties.

CASE L.—Age 16. There was some truancy and some stealing: he stole especially from his mother. There is some over-interest in pleasures, and some indication of instability. He used to have bad dreams, there was some worry, and apparently excessive masturbation. But he is frank, and some explanation for his troubles is to be found in the family background: the father is a gambler and the mother of questionable character.

There is no one of these boys, therefore, in whom there cannot be found some evidence of the type of characteristics and developments that we find in the more marked psychopathic cases.

CASES WITH MENTAL DEFICIENCY.²

In eighteen cases the low intelligence is sufficiently important to make them of little interest from the point of view of study of psychopathic personality, although we should not dismiss a case too readily as understood when we have determined the presence of the mental deficiency. In five of the eighteen there is the condition commonly called "instability"; there are reactions that are not related simply to the mental deficiency, but to personality deviations

²The distribution of the intelligence quotients for the whole group of fifty cases is: 50-9, 4 cases; 60-9, 8 cases; 70-9, 16 cases; 80-9, 10 cases; 90-9, 8 cases; 100-9, 2 cases; 110-19, 2 cases. The median I. Q. for the group is 77.5.

which ally these cases more closely with the psychopathic personalities.

Considering the group having intelligence quotients less than 70 (12 cases) three were regarded as "unstable" and the remaining as fairly simple cases of bad behavior with mental deficiency or grave retardation.

A characteristic picture of mental deficiency is the following:

CASE VII.—Age 17. Here there was truancy and incorrigibility in a good-natured boy having an intelligence quotient of 53. He states that he is timid, but always happy.

CASE X.—Age 14. He is another incorrigible. He ran away from home, would not work, stole. He was teased, and he speaks of some nervousness, but is big and strong. His intelligence quotient is 60.

CASE XV.—He is fifteen years of age, is 6 feet and 2 inches in height. He made two attempts to commit "rape." He is exceedingly timid, is afraid of other boys, despite his great size, and used to be very much afraid of his father.

CASE XVIII.—Age 14. He is an inferior boy from an inferior family, is good-natured, contented. He has done some stealing.

CASE XXII.—Age 15. He was arrested for stealing a watch and running away from home. He could not learn at school, was just lounging about the house, was nervous about his father, who drank.

CASE XXIX.—He is a country boy of 18 who does not show any very unusual traits. He is contented, but is shy and awkward and complains of some nervousness. He was involved in an affair of stealing, and did some drinking.

CASE XXXIV.—Age 17. He is a pleasure-loving boy, a good worker. He bought a car so that he could have more pleasure. He acquired gonorrhœa and syphilis. He is very easily influenced.

The other cases placed in this group add little or nothing to the general picture, except that one having I. Q. of 61 shows some sexual characteristics somewhat unusual in this class, talks about being good and seems rather effeminate.

Three of the boys having intelligent quotients below 70 showed more of the marks of psychopathy.

CASE XI.—Age 13. He has an I. Q. of 60. He is disorderly, uncontrollable, has a violent temper, could not get along with boys, who called him names. He seems childish, excitable, and generally inadequate and looks effeminate.

CASE XVII.—Age 13. He ran away, was truant, was cruel to younger boys. His own statement is that he was picked upon by others and then he would beat them. He looks cross and shows nervous tension and admits bashfulness and that it is hard to recite in school.

CASE XLII.—He presents more of the picture of the chronic delinquent than the others of the group. He is 18 years of age and the intelligence quotient is 69. There was some drinking, he had relations with girls, was charged with larceny and assault and robbery and selling stolen property. He is nervous, stutters, is excitable, has some peculiar ideas, seems to have been influenced by the desire to buy friends. He was over-mobile in the examination, laughed a good deal, seemed emotional, and admitted that he did some worrying.

BORDERLINE INTELLIGENCE.³

Although no line between significantly low intelligence and normal intelligence as related to behavior can be drawn, the cases in which the intelligence quotient lies in the range from 70 to 75 (12 cases) show more differentiation in the behavior and personality pattern than those below 70. Three were included among the psychopathic personality cases (Cases VI, VIII, and XLI), two of them among the most distinct of the psychopaths. In the classification of the remainder, three were designated merely as borderline intelligence cases, stable; two were regarded as borderline, unstable; one borderline, neurotic; one constitutionally inferior; two as inferior normal. The three called borderline, stable, do not show any features of especial interest, resembling closely in general outline either the mentally deficient or those we have called normal.

CASE XXI.—Age 13. This boy shows nothing in addition to the type already met with except that he is rather markedly nervous, is plaintive, complains that he is not perfectly well, says that he cannot hold things and that he is always thinking about getting hurt. I. Q. is 72.

CASE XLIII.—Age 18. I. Q. 71. He shows some of the characteristics of the psychopathic personality. He was incorrigible, truant, scrappy. In the school he has been reported for arguing, carelessness, impudence, threatening, sodomy. He likes a rough life, is athletic, restless, has a bad temper.

³ Five cases were *classified* as borderline intelligence, I. Q. 70-73. One with intelligence quotient of 73 by the National Group Test (Case 1), not regarded as satisfactorily measured, appears among the psychopaths.

UNCLASSIFIED CASES.

Seven of the boys we preferred to leave unclassified, pending further study and information. A brief review of them will perhaps be of some interest.

CASE II.—Age 13. This is a peculiar case, in which there is evidence of serious mental deviation of some kind. He is in general very untruthful and sly; he shows no affection; he has a peculiar laugh. Usually he is docile, but he has "spells" of various durations, from hours to days, when he seems different: he is then excited, unresponsive, may be explosive, and will curse, has a staring expression and his mouth will twitch.

CASE XVI.—Age 12. He is another peculiar boy, who was sent to the school because of repeated truancy and persistent disobedience. His intelligence quotient is 75, and in school he is reported as hopeless. His tendency is to deny all charges, except that he admits that he did not always do his work right at home. He pours out a preposterous story of charges against his mother by adoption, who, he says, tried to poison him and maltreated him.

CASE XIX.—Age 12. He is a boy of very peculiar appearance, with over-mobility of hands and face, over-talkative, talks rapidly, is friendly, childish and innocent. In high pitched voice, he tells long stories of his troubles. He is nervous away from home, gets excited, is a nail-biter, complains that he forgets, that he could not do the drills in school. He failed to do three digits forwards. Intelligence quotient is 77. He was sent to the school because he was out nights and begged. There is a history of fracture of the skull when he was six.

CASE XXXIX.—Age 14. He is a boy of good appearance, comes from a good family, and was sent to the school because of his persistent stealing, on account of which he was expelled from a school. Otherwise he has had no trouble. He gives a history, however, of having had a long-continued sexual affiliation with another boy, in which the other boy gave him money for the privilege of masturbating him, this leading to masturbating himself. This began at the age of about six, but he states that he had already taken things before that. He stole to have money to buy friends, wished the boys to think that he was a "lot." He blames only himself, says that he has been well treated. Intelligence is normal, intelligence quotient is 99.

CASE XL.—Age 12. He was a hard child to manage, was a problem child in school, and in foster homes, it is said, was noisy and contentious. In examination he seemed self-deprecating and conscientious, said he was worried about some bills for his board that he thought had remained unpaid. He said that he used to be stubborn and lazy, wanted to sit down and play, that boys did not like him because he was not good-looking.

CASE XLVII.—Age 15. He is a large blonde boy who has a history of somewhat chronic bad behavior. He admits stealing and he was sent to the school because of incorrigibility and violating probation. He has worked in various places, and there always seemed to be some condition not just right and he would soon leave. He talks in a somewhat goody manner, and he expresses great self-confidence. But he has fears, is afraid of fighting and of getting hurt. There is peculiar facial movement, a tightening of the lips after every remark. He blames the boys with whom he went, for his troubles. Intelligence quotient is 78. The psychopathic features are evident, but he was left unclassified because there were some indications that he might be developing peculiar ideas: he talked about becoming a great ball player, was interested in seeing the school produce in his person a second Babe Ruth.

CASE XLIX.—Age 13. He is a small boy who has been implicated in ten or more serious burglaries which puzzled the police for a considerable time. He is a good-looking, polite boy, rather innocent in appearance, tearful and sober in the examination. He complained that he could not get his lessons, said that he was a bed-wetter and that he bit his nails. He is not afraid, not bashful, but worried after he stole. He seems a normal boy on the whole, but in view of his remarkable performances which remain unexplained, it was thought best to leave him unclassified.

MISCELLANEOUS CASES.

The following cases, although intrinsically interesting, are not especially useful in the present connection. Cases III and v are post-encephalitic personality cases. Case xx is predominantly psychoneurotic. In xxiv the constitutional inferiority is the most prominent feature. Case xxxviii is traumatic. Of these, Case v is of the most interest.

CASE v.—Age 12. He is to a high degree unstable. There is a definite history of *encephalitis lethargica*, occurring when he was ten years old. But before that, probably, he was taught some homosexual practice by a colored boy, and he also stole some, this beginning at the age of six or seven. His bad behavior has continued, and he is one of the most difficult boys in the school. In examination he appears very emotional, his reactions covering a wide range. He is grouchy at one moment and shows amusement at another. First he is friendly, then impertinent. In the school he is often explosive, he has been reported for "immorality," he fights and has been rather seriously assaultive. He talks about being good, has become very religious, and although a Jew, was greatly interested in the Christian faith. He says that he is troubled by sexual excitement. He recognizes his bad temper and his tendency to argue and talk loudly, says that sometimes his "mouth shoots off" too much. People hurt his feelings,

he says. He sometimes cries. He thinks that people think he is crazy. He likes those who like him. One lady teacher he hates: she has pets. He has a sense of humor, likes jokes.

Here the difference from the ordinary psychopathic case is clear enough. He reacts to feelings of inferiority, but the main feature is the striking emotional instability, and the lack of continuity and consistency in the behavior pattern. This is very characteristic, it appears, of the post-encephalitic case. His conduct is not that of a child who, having strong persistent desires, seeks their fulfillment by direct methods, but that of one who is at the mercy of the stimulus which at the moment is effective in arousing the emotions.

CASE III.—Age 18. This is another post-encephalitic case, with definite neurological damage. There is a history of disturbance of sleep and of developing bad behavior. Although he is not of the hyperkinetic type, but rather of the parkinsonian and bradyphrenic, the behavior difficulties seem related to his disease.

CASE XX.—Age 13. He is the only one of the fifty who was regarded as markedly psychoneurotic. He has many fears and other signs of nervousness. He stutters, has some tendency to produce somatic complaints, and seems in general to be handling his difficulties in a way to develop psychoneurotic reactions.

CASE XXVI.—This boy is both physically and mentally inferior, although not mentally deficient. He does not feel well, is depressed. He is regarded as a "constitutionally inferior" child.

CASE XXXVIII.—Age 14. This seems to be a traumatic case. There is a definite history of fracture of the skull. Conduct is not especially bad. Intelligence is normal, I. Q. 82.

SUMMARY AND CONCLUSIONS.

This is the second in a series of orienting studies of psychopathic personality, and is a report of an investigation of a group of fifty boys of a training school for delinquents referred to the psychiatric clinic as especially problematic. They were examined especially with reference to the presence of characteristics of the type of mental deviation we call psychopathic personality, which we provisionally define as a persistent behavior pattern or tendency in which there is usually excessive demand, either special or general, which when there is failure of direct or immediate satisfaction is

reacted to by a tendency to develop characteristic ways of dominating situations; by the emotional displays we call tantrums; by sulks and expressions of inadequacy; and by running away in some form. It is pointed out that, in all probability, these reactions do not represent a specific mental disorder, but a class of reactions, which may be based upon a varied background. In these cases we usually find antagonism towards some important person in the environment, detect feelings of inferiority and very often find a variety of behavior disorders.

Study of the fifty cases showed that in the most numerous subgroup the behavior difficulties and the ill-adjustment in general were related to mental retardation or deficiency. In twenty-four the intelligence quotient was 75 or below. In none of these cases with three possible exceptions did we find the characteristic picture of psychopathic personality. The median intelligence quotient of the psychopaths was 87 as compared with 77.5 of the whole group of fifty cases.

The main picture shown by the delinquent defective boy among these cases was that of somewhat uninhibited demand and a personality characterized by good-nature, pleasure seeking, and simplicity of conduct, although there may be some signs of timidity. In the more unstable mentally deficient there were the types of behavior that are related to the anger reactions; we find bad temper, excitability, but none of the persistent behavior patterns found in the developed psychopath.

A composite picture of the twelve psychopaths would show a prevalence of antagonistic attitudes toward a parent or parent substitute, sensitiveness, restlessness, marked social difficulties, compensatory actions such as lying and stealing, nervousness, bashfulness, and various evidences of ill-adjustment and feelings of insecurity. We do not find among them "lack of moral sense," but we do find a tendency to ignore the interests of other people because of the ardor of their own desires, their restlessness and demand. We should have to look among the mentally deficient for the more typical amoral and irresponsible person.

Notes and Comment.

DR. MEYER'S ADDRESS AT MINNEAPOLIS.—Elsewhere in this issue of THE JOURNAL we print the Presidential Address delivered at the eighty-fourth annual meeting in Minneapolis—an admirably conceived and eloquently written survey of Thirty-Five Years of Psychiatry in the United States, as seen with the penetrative vision of the *facile princeps* of American psychiatry—who, were he not too modest, might with complete justice say of its evolution and development: *quorum magna pars fui*. It would be to paint the lily, and presumptuous into the bargain, to attempt to indicate the manifest excellencies of this conspectus—excellencies which are only the more compelling upon a second reading. But one word we would hazard. Those who have interested themselves in the history of medicine are aware that from the days of Cos and Cnidus the medical mind has been ruled by two fundamental philosophies, now by the one and now by the other, down through the centuries. For that philosophy which took form in the precept and the practice of the first and greatest of physicians, Hippocrates, medical diagnosis consisted in the recognition “of the whole disorder of function present to the individual, of the whole complex of its causation, and of the whole series of its consequences.” But for the opposing school, that eventually identified with Galen, diagnosis meant “the reference of the patient's illness to some formally recognized concept regarded as a philosophic reality,” a “disease entity.” The latter doctrine represents, in a word, the investigation of “hypostatized ‘diseases’ rather than of *what happens*.” Seen in the perspective of the centuries-long struggle between these two philosophies which has marked the evolution of medicine, during which the medical mind has only too persistently been ensnared in the toils of Galenic scholasticism while the Hippocratic approach has gained a temporary ascendancy only to suffer eclipse after eclipse, it is really unnecessary to offer further comment upon the Hippocratic attitude, so painfully and even yet incompletely wrought forth

in medicine, which modern psychiatry is more than merely beginning to embrace. More immediately and specifically, there stands out the more boldly upon such a background that "new appreciation of a real natural-history integration of man," to quote his own words, with which Dr. Meyer is so wholly identified, and which, may we add, even he himself has perhaps nowhere better resumed than in the present address? Indeed, is it not owing in more than measurable degree to Dr. Meyer that we need not altogether say of American psychiatry what Lord Bacon once said of medicine, that it is "a science which hath been . . . more professed than labored, and yet more labored than advanced; the labor having been, in my judgment, rather in circle than in progression"?

H. A. B., JR.

QUERY.—The American Psychopathological Association chose this year to present to The American Psychiatric Association a proposal for merging with the latter; a proposal which contained at least one striking feature which seems peculiarly to merit discussion in these columns. The proposal failed—perhaps from inclusion of this striking feature.

It may be that the older association has been saved from a lethal menace. The Acting Editor cannot derive conviction for this surmise, however, for the Association seems already to include within it the same tendency as that objectified in the psychopathologists' proposal; *e. g.*, in its Committee on the Relations of Psychiatry and the Social Sciences. It may be that the Association has foredoomed itself by failing to discharge this radical group in the course of the Minneapolis meeting. In another year, it may be too late!

The augury is really bad, for "progress depends [indeed] on the existence of a minimal standard . . . which we create and maintain," and already this committee has brought a *second* non-medical scientist to address *one* annual meeting. First we know, we will be exposing the gullible public to non-medical scientists as we are now exposing them to non-medical charlatans. And that not because of our neglect and indifference and inefficiency in securing attention from medical men and curriculum makers, but from the activity of radicals within us! What will become

of the public if men devoid of the peculiar ethical standards solely to be derived from studying medicine, begin to enquire into human unhappiness and inefficiency—in a word, into maladjustment—not alone with the armament of rigorous scientific training in some field of social science, but also with some degree of back-handed recognition from American psychiatrists?

Attend, my readers; for just that is the proposal of the American Psychopathological Association—and, by implication, of The American Psychiatric Association Committee on the Relations of Psychiatry and the Social Sciences. Here, we have food for abstruse thought.

The American Psychopathological Association, an organization . . . [to promote the scientific investigation of human maladjustment, individual and social], in requesting union with The American Psychiatric Association, offers to merge its individuality as a scientific society with The American Psychiatric Association; *provided, however*, . . . That the Section [on Psychopathology, to be created of its membership] be authorized to maintain a list of affiliates selected by the Section and composed of non-medical scientists who are actively contributing to the advancement of psychopathology; . . . and provided further, that affiliates of the Section shall receive THE AMERICAN JOURNAL OF PSYCHIATRY [for the payment of membership dues].

What will the Association do with such a proposal, if it is presented again? Shall we gird ourselves for combat and defend a purely medical base line for our inquiries into mental disorder, or shall we—as our before-mentioned committee also recommends—encourage by all reasonable means cooperative endeavors of medical and non-medical scientists to elaborate sound principles in the science of human maladjustment, and sound practices in the art of its remedy?

The writer would urge on his readers serious thought before accepting the former alternative. He shares with Ex-President Meyer the belief that “the fate of any real and lasting growth would depend on the soundness of a certain kind of base line, or a basic minimum standard even for the average activities” and that the psychiatrist should have as first concern “the creation of a sounder average level of the medical and psychiatric work as a whole” among all those caring for the mentally ill or potentially ill.

We are now attempting to elevate psychiatric considerations into the consciousness of the general medical man. Perhaps we will encounter little embarrassment if the viewpoints, techniques and data of anthropology, sociology, economics, political science, psychology, scientific history, and the science of religion are introduced more effectively into our consciousness, by intimate association with interested representatives of these disciplines.

H. S. S.

Association and Hospital Notes and News.

THE EIGHTY-FOURTH ANNUAL MEETING OF THE AMERICAN PSYCHIATRIC ASSOCIATION.—The eighty-fourth annual meeting at Minneapolis was marked by personal tributes to the President, Dr. Meyer, by the inauguration of the first Section and by the recognition of the Massachusetts Psychiatric Society as the first local division.

The Section on Convulsive Disorders met on Monday, June 4. It speaks well for future sessions of this Section that the room selected was too small. A group of five papers presented were discussed by twenty-nine different speakers. The Section continued its scientific session on Monday afternoon and on Tuesday morning had a business session which lasted only ten minutes.

This can be considered a very highly successful beginning when one considers that the Section's Secretary, Dr. Shaw, died in the week preceding and that the loss of his keen personal interest was felt by every one.

The general meeting opened as usual on Tuesday morning and was marked by a welcome extended by Dr. William J. Mayo. The Presidential address, an historical one, ended the session. On Tuesday afternoon the papers by Drs. Lennox and Fay on the Relation of Chemical and Mechanical Processes to Epileptiform Seizures received much attention and were well but not sufficiently discussed.

On Wednesday morning the Association took great pleasure in adding Dr. Tilney, of New York, to its list of Fellows. A group of ten papers was considered and in the evening the Association listened to the Annual Address by Dean Roscoe Pound of the Harvard Law School.

On Thursday five papers were considered in the morning and in the afternoon two papers were considered at a joint session with the American Psychoanalytical Society and two others in general session.

On Friday morning in a joint session with the American Psychopathological Association an address was given by Dr. Chapman and four papers were presented. In addition a guest of the Association, Professor R. H. Park, of the University of Chicago, discussed the approach of sociology to the problems in which psychiatrists are interested. Dr. Park's talk was linked up closely to Dr. Lowrey's "Study of Personality," Dr. Plant's "Sociological Facts Challenging the Practice of Psychiatry" and Dr. Sullivan's report of the Committee on Relations with Social Sciences.

In the business sessions of the Association Atlanta was selected as the place of meeting for 1929 and Washington, D. C., for the 1930 meeting with the understanding that in 1930 a joint session was to be arranged with the First International Congress of Mental Hygiene.

Dr. Orton was elected President, Dr. Bond Vice-President and Dr. Cheney Secretary-Treasurer. Dr. Meyer, Dr. Klopp, Dr. Kilbourne and Dr. Chapman were elected Councilors and Dr. Carmichael an Auditor. Dr. Robert L. Dixon was elected Chairman of the Section on Convulsive Disorders and Honorable Vice-President of the Association.

In the several committee reports and in general discussions the following ideas found favor. That recognition of psychiatry be urged upon the American Medical Association and the American Nursing Association. That mental hospitals should be graded in some way which would win them support in their different undertakings.

The editor of THE JOURNAL proposed an increase in issues to nine a year and the proposal was referred to the Executive Committee.

COMMONWEALTH FELLOWSHIPS IN PSYCHIATRY AT THE BOSTON PSYCHOPATHIC HOSPITAL.—Opportunities for an adequate training in psychiatry are at present somewhat meager; at the same time from many fields come insistent demands for psychiatrists, so that there is danger that poorly trained men may be sent out into the field to pose as competent and mature workers.

The Commonwealth Fund, sensitive to this situation, has created a number of fellowships in psychiatry so that a chosen group of young psychiatrists may have opportunities for a broad training

and for personal research free from that load of routine which in the past has been such a handicap. Five of these fellowships have been made available in the Department of Psychiatry, Harvard Medical School, with which the Boston Psychopathic Hospital is closely associated.

These fellowships will only be available for workers who have already shown evidence of good work in psychiatry, who wish to prepare themselves in a well-rounded way for a career in psychiatry, and who are willing to devote an adequate time to this preparation. Each fellowship may be continued for three years but continuation would depend on the excellence of the work of the fellow.

Each fellow would follow a program determined by his special needs and interests. The fellows would have available not only the clinical and laboratory facilities of the Boston Psychopathic Hospital, but those of other institutions, and opportunities for special work in school, industry and the general social field. A period of study in a foreign clinic might also be recommended.

Letters of application with details as to previous training and experience may be sent to Dr. C. Macfie Campbell, Boston Psychopathic Hospital, 74 Fenwood Road, Boston Mass.

APPOINTMENTS AT THE COLORADO PSYCHOPATHIC HOSPITAL.—Through the generosity of the Commonwealth Fund of New York three fellowships of two years duration have been granted for training in psychiatry in the University of Colorado, Psychopathic Hospital. These fellowships carry a liberal stipend and are offered to physicians who have completed an internship and who desire to enter the field of psychiatry. The following men have been appointed to these fellowships and will begin work July 1, 1928:

Dr. Hugh E. Kiene, graduated from the University of Colorado Medical School, 1927. Interned at the Denver General Hospital, Denver, Colorado.

Dr. Harry M. Murdock, graduated from the University of Nebraska College of Medicine, 1927. Interned at University Hospital, Omaha, Nebraska.

Dr. Carl P. Wagner, graduated from the University of Nebraska College of Medicine, 1928. Interned at Bishop Clarkson Memorial Hospital, Omaha, Nebraska.

DEATH OF DR. SAMUEL E. SMITH.—Dr. Samuel E. Smith, Provost of Indiana University, died May 29, following an acute exacerbation of circulatory disease from which he had suffered for some time.

Doctor Smith was a native of Indiana; entered the practice of medicine at Gosport, thereafter going to the Northern Indiana Hospital for the Insane. In 1891 he accepted the superintendency of the Eastern Hospital for the Insane, now the Richmond State Hospital, from which position he resigned December 1, 1923, to become Provost of the University. During his active participation in the institutional care of mental patients, Doctor Smith made a remarkable number of the valid improvements which we are developing to-day. He planned and supervised the Madison State Hospital, was concerned in the erection of the Indiana Reformatory, the Indiana State Farm, and the James Whitcomb Riley Memorial Hospital for Children.

Doctor Smith's last work of national note consisted in his services on Doctor Work's Committee which surveyed St. Elizabeth's Hospital, presenting its report last year.

A memorial notice of Doctor Smith will appear in an early number of THE JOURNAL.

Abstracts and Extracts.

Proceedings of the Joint Meeting of the Section of Neurology of the Royal Society of Medicine and the American Neurological Association.
(Brain, Vol. L, pp. 275-728, October, 1927.)

In this special issue of Brain appears in full the program of the recent British-American neurological meeting, held in London last July. In total, there are here published thirty authoritative original contributions by outstanding readers, dealing with a variety of subjects. Thus there is a symposium of six papers relating to the cerebellum by American workers, discussed by the British group, a series of four British presentations on sensory disorders in organic nervous disease, with comments by representatives of the American association, and a collection of twenty "short papers" so called, covering the general field of neuropsychiatry. Report is made also of a short clinical session. All of the material presented is of distinctly high grade, well worth careful reading and meriting really extended comment. This, however, for obvious reasons would hardly be expedient here and mention is limited only to such contributions as seem of especial interest psychiatrically.

Important in this connection is the paper by Ernest Sachs, on symptomatology in frontal lobe lesions. Sachs' conclusions are based upon a series of twenty-five cases, largely of tumor type and all verified by operation or autopsy. The usual signs emphasized diagnostically, as emotional disturbance, eye-ground change, tremor of the upper ipsilateral extremity, absence of the abdominal reflex heterolaterally, anosmia and speech disturbance were not observed to be sufficiently constant or characteristic to be of much help, as a matter of fact being determinable in only about half of the cases. However, two additional manifestations were found to stand out surprisingly uniformly, to such an extent actually, as to warrant their being accorded almost pathognomonic significance. The first is a slight weakness or paresis of the lower face, that portion innervated by the lower two branches of the heterolateral facial nerve. This was noted in twenty of the cases and was most characteristically perceptible during conversation, showing itself as a droop or lag. This sign Sachs believes to be a pressure effect upon the face center, and its frequent exhibition is explained on the basis of the relatively greater specialization and sensitivity of this center in contrast with certain others. The other sign described is that of characteristic mental change, observed in twenty-one of the twenty-five cases. This manifests itself chiefly as a peculiar indifference on the part of the patient, with lack of insight and appreciation as to the gravity of the actual situation. This state, affectively, is one of neutrality or apathy rather than either

depression or euphoria. Part of the mental change also is defect in memory, particularly for recent events, a condition catamnesically described as "haziness" of memory and "living in a fog." Sachs' feeling relative to the signs described is well expressed in his conclusion:

"This mental disturbance, when present and unchanged for some time, and associated with some facial weakness and headache, in the absence of a positive Wassermann, indicates a frontal lobe lesion and entitles the patient to an exploration."

Schwab also contributes to this problem in his paper devoted to personality change in frontal lobe tumors. In this, there is submitted first an interesting general discussion of the nature and organization of personality, which is finally characterized, for objective and clinical purposes, as "the projection into the external world of the inherent or acquired elements which make up the physical conformation of the individual, organized into a composite picture through the synthetic action of consciousness." Schwab proceeds further to describe personality as an integration of physical, physiological and psychical attributes, plus a certain more or less intangible or elusive total emanation or expression, which he speaks of as "flavour," *i. e.*, the "general impression" the individual creates, thus "pleasing, disagreeable, revolting, suspicious, charming, etc." In frontal lobe lesions careful examination is most likely to reveal changes and alterations in this complex, even though slight and casually, apt to be overlooked, and for this reason in cases where frontal lesions are suspected, or in obscure cases presenting such possibility, painstaking analysis of this field should never be neglected.

Winkelman and Eckel, in their report on productive endarteritis in toxemias, bring to light interesting neuropathological changes, which would seem of considerable significance in relation to the amentia and delirial syndromes so frequently noted in toxico-infectious conditions. Similar changes have been described by Nissl and Alzheimer in syphilis, also latterly by others in relation to metallic and carbon monoxide poisoning, and in certain infections, such as typhoid and typhus, dysentery, malaria and tuberculous meningitis. The pathology found is characterized by pronounced proliferation, without inflammatory reaction, implicating chiefly the intimal endothelium but also to some degree involving the adventitia. These changes affect particularly the small cortical vessels. Mitosis and new vessel formation are noted too, likewise areas of partial softening, and where there is any degree of chronicity, definite tendency is observed to both progressive and regressive alteration. This vascular type of pathology, the authors feel, may very well be primary to the commonly noted ganglion cell damage, and in that sense primary to the actual mental syndrome characteristically observed.

E. Miller, of London, under the title "Mental Dissociation," contributes interestingly to the possible neurologic substrate of dissociation, including in this, reactions ranging from the simpler hysterical manifestations, hypnosis and narcolepsy to the more complicated and massive symptomatology of catatonia and parkinsonism. Physiologically in such states, from work by Pavlov and Krasnagorski, correlated with critical psychiatric observation, Miller is led to the postulation of a suppression of conditional (cortical)

reflexes by the offending stimulus, whatever it may be, leading to an uninhibited domination by automatic, phylogenetically lower, mid-brain centers. In other words, in such conditions there obtains a dominance of extra pyramidal control as opposed to the usual cortical ascendancy. That is, there occurs a lapse from the ordinary "totalness" of response, a "trunkation," so to speak, of the normal or complete integration structure, in an organism unable, in the face of stress, properly to maintain its integrity as a reacting complex.

Finally, mention is owing the brief but important report made by Adolph Meyer of structural changes found in Huntington's chorea, by the late Dr. Charles E. Dunlap. In this condition, on the basis of a large series of most carefully analyzed cases, it appears that the striatum is reduced to about one half the normal size. There occurs further a varying but distinct diminution in the number of the cells and fibers of the putamen and caudate, and some shrinkage of the pallidal ground substance, with resultant crowding and an appearance of increase in cell number. Some reduction is apparent also with reference to the ansa lenticularis. As regards the corpus Luysii, the findings were not definite. No observations were recorded respecting the substantia nigra and the red nucleus does not seem to be affected. The cortex, however, while reduced in size, as a rule shows no reduction in cell number although there is considerable cell shrinkage, with definite tendency as respects the cortical radial fiber fans to diminution in both size and number. Relative to the thalamus, brain-stem and cerebellum, it may be mentioned, no noteworthy abnormality seems characteristic.

RAPHAEL.

Book Reviews.

The Clinical Study of Mental Disorders. By J. R. LORD, M. B., M. R. C. P.
(London: Adlard & Son and West Newman, Ltd., 1926.)

The above is the full text of the Presidential Address delivered by Dr. Lord before the Royal Medico-Psychological Association on the occasion of its 85th Annual Meeting in London, July, 1926. The style is pleasing and the author is successful in effectively portraying the rapidly broadening scope of psychiatry, its present meaning and possibilities, its needs and future aspirations. For the type of presentation it represents, this brochure is really interesting, stimulating, and penetrative, and should well recompense the reader for his effort. If nothing else, he will realize that American psychiatry is by no means unique in its problems.

Dr. Lord first sketches the recent development and expansion of psychiatric thought and practice, finally defining that interest, by synonym, as medical anthropology, in the broadest sense of that designation. He then proceeds to stress the need for a closer and more vital inter-relation between psychiatry and medicine as a whole, and deplores that until now in the mental field, in England, the administrative and legal seem decidedly to have overshadowed the scientific and investigative. In this latter connection, the suggestion is made that the British society provide for a sufficient number of meetings, to be held at active hospital centers, and to be entirely clinical and scientific in nature and divorced from the usual order of business and non-medical routine. A plea is made also for a simpler and more uniform terminology, likewise a standard and more acceptable taxonomy or classification. Most emphasis, however, is focused upon the need for what Dr. Lord calls "team work." By this is meant the intensive and coordinated application of all available approaches—physiological, structural and psychologic—in their widest implications, at the hands of cooperating experts, coordinated by the psychiatrist, to the end that there may thus be determined a properly integrated understanding of the confronting "total reaction," or afflicted human. A forward looking thought truly, which one sincerely trusts may become more than simply an ideal.

RAPHAEL.

Mind and Its Disorders. By W. H. B. STODDART, M. D., F. R. C. P. (Philadelphia: P. Blakiston's Son & Co., 1926.)

This popular British text, now in its fifth edition, revised, brought up to date and somewhat extended, is a substantial, well-arranged and illustrated volume of some 600 pages, including index. It is comprised of three parts: the first, a discussion of psychologic fundamentals; the second, an application

of these principles to the interpretation of clinical symptoms; and the third, devoted in ample and lucid detail, to psychiatric nosology and syndromy as such. There are included, too, special sections on case-taking, treatment, and medico-legal relations, as well as an appendix dealing with staining methods and the technology of spinal fluid examination.

Although, as a whole, well and simply written, this work of Stoddart's is still more or less of the orthodox, descriptive, empirical order, a composite seemingly of the older academic physiological psychology, Kraepelinism, and the fruits of a long continued objective, clinical experience with "inmate" subjects. In any case it can scarcely be considered an inspiring effort, giving no especial impetus to thought and adding but little or nothing to psychiatric theory or philosophy. However, for what it purports to be, a general introductory text for elementary students and practitioners, it may be regarded as an honest, thorough, "standard" presentation, and for this group should prove, within its limits, a really helpful reference and clinical guide.

An attempt is made, it should be noted in passing, to indicate the dynamic implications of mental disease, but rather rudimentarily and hardly with desired or fully satisfactory end-result. At any rate, it falls short in ultimate analysis, with reference to an entirely adequate depiction of psychopathology as fundamentally failure in appropriate biologization, on the part of this or that human whole, taking the form clinically of certain general but well-defined reaction types; the same representing but natural chapter sequences in the specific life history or ontogeny and, broadly construed, more individual than abnormal, in the sense of qualitative difference, super-addition or unnaturalness. That is, one misses the helpful simplification, unification and clarification, gained through the interpretation of disease in terms of life and living. There is endeavor also to incorporate the Freudian contribution, and this one feels is somewhat forced and perhaps rather insufficiently critical. Relative to terminology likewise, some objection may be raised as, for example, among other possibilities, the inclusion of the now archaic dementia paranoides (both "mitis" and "gravis") as one of the forms of dementia præcox. Also in this connection, schizophrenia is but casually referred to, dementia præcox appearing throughout the preferred designation. Further, in relation to this disorder, it is deserving of comment that no cognizance is taken, apparently, of the very vital recent additions to the concept, by Bleuler, Kretschmer and others, bearing upon the importance of inherent make-up and constitution.

RAPHAEL.

Psychological Medicine. By SIR MAURICE CRAIG, M. D., M. R. C. P., and THOMAS BEATON, M. D., M. R. C. P. (*Philadelphia: P. Blakiston's Son & Co., 1926.*)

Having gone through four editions since 1905, Craig and Beaton's book is now a thoroughly complete, well modernized and compactly set-up general text, which should prove really helpful to introductory students. The content is built up about a skeleton of nine sections. The first is a sound intro-

duction to underlying biologic fundamentals and psychological principles, and the second, a discussion of the general questions of causation, classification and symptomatology. Then follow five sections devoted to clinical psychiatry as such. A final miscellaneous section is given over to special chapters on sleeplessness, therapy, malingering, examinations, laboratory procedures, and forensic problems.

While to be sure, in a measure handicapped, apparently a necessary evil to most elementary texts, by a certain doctrinaire quality and circumscription, the treatment is throughout simple, clear, concise and, not infrequently, agreeably pithy, representing on the whole a very laudable attempt to present a bulky mass of information neatly and with effect. The authors also are to be complimented for their conscientious and intelligent effort relative to the erection of a dynamic and properly biologic approach, emphasizing meritfully such matters as the psycho-analytic contribution, constitution and reaction type, and integration in relation to conduct, normal and abnormal. Some objection of course might be raised to the retention of such terms as primary and secondary dementia but these are distinctly minor faults, well in the background, and should not detract from the worth of the book as a recommendable work for beginners.

RAPHIAEL.

Mental Disorders. A Handbook for Students and Practitioners. By HUBERT J. NORMAN, M. B., Ch. B. (Edin.), D. P. H. (Edin. and Glas.), Medical Superintendent, Camberwell House, London, Lecturer on Mental Disorders, Westminster Hospital Medical School. (New York: William Wood & Company, 51 Fifth Avenue. Edinburgh: E. & S. Livingstone, 16 and 17 Teviot Place, MCMXXVIII.)

In his preface the author states that "it is the rule for readers of books on mental disorders to turn to the more practical part and to skip lightly over—or to eschew completely—the more abstract, or 'psychological' portions. In deference to this a departure has been made from the more usual procedure and the descriptions of the actual mental disorders have, therefore, been given preference. As a matter of fact, the student or the practitioner may acquire quite a good empirical working knowledge without troubling himself too much about psychological matters; but it is not likely that he can have as keen an interest in the subject." Despite this plan the author devotes three brief chapters to insanity and conduct, etiology, and classification. These are followed by chapters upon disorders associated with constitutional instability, melancholia, mania, stupor, delirium, dementia præcox, paranoia, borderland and eccentric types, and mental deficiency. Under disorders associated with the psychoneuroses are chapters upon neurasthenia and psychasthenia, epilepsy and insanity. Under symptomatic or associated disorders are described the intoxications, mental disorders associated with bodily diseases and infections, mental disorders associated with organic disease of the nervous system, including general paralysis of the insane, mental disorders associated with epochs of life, and dementia.

Section II of the book is entitled general considerations and discusses historical, psychological, pathological, therapeutic, and legal aspects.

It would seem that the student or practitioner would obtain information upon mental disorders more clearly and simply from many other sources. The chapter on melancholia opens as follows: "There is a tendency nowadays to include these disorders in one group under the name of manic-depressive insanity. While it is undoubtedly true that there are many cases which may be accurately described as manic-depressive, there are others where the cyclical recurrence of phases of mania and melancholia do not take place. Only by making the manic-depressive category into a sort of Procrustean couch can conformity be obtained. Kraepelin's classification of these disorders has, however, been distinctly helpful; not the less so because it has served to make more clear our conception of the periodicity which is to be observed in certain psychoses. Indeed, it is not only in mental disorder that this has to be noted; it is characteristic of all organic life and it may be compared with seasonal variations. This it was which led the older writers to ascribe as the cause of insanity the influence of the moon, and hence to speak of "lunacy." Even if we are to include all the cases of true melancholia and mania in this category, what is to be said of the melancholia, or the depressed affective tone, which quite frequently is found in association with general paralysis of the insane, with exhaustion cases, with epilepsy, and so on? It will be more helpful, therefore, to describe melancholia and mania separately, and then to speak of the definitely cyclical disorder, manic-depressive insanity." The author then proceeds to describe the bodily symptoms and the mental symptoms of melancholia in the same indefinite fashion that he has introduced us to the subject. Throughout the book there is shown the same tendency to cavil at modern tendencies. Clearness of statement is frequently sacrificed by the parenthetical thoughts introduced into sentences, causing a diversion from the central idea. Reading such is tiresome and confusing. The book cannot be recommended for the purpose it is intended.

DUNTON.

Psychophysiologie et Psychopathologie du Corps Thyoide. By A. SICCO.
(Paris: Felix Alcan, 1927.)

Dr. Sicco, Professor of Psychiatry at Montevideo, in this neat, hundred-page duodecimo, affords us an interesting discussion of the more significant interrelations, normal and pathologic, between the mind-body and the endocrines, emphasizing more particularly the thyroid. While representing no addition especially, to the concept, the presentation is nevertheless commendably simple, clear, thoughtful, contemporary and based evidently upon a really wide, critical analysis of the available literature.

Following an introductory statement, indicating the indubitable closeness of the somato-psychic-endocrine connection, examples in point are cited, i. e., psychic symptoms associated with glandular pathology such as hypopituitarism and in suprarenal conditions, and the occurrence of endocrine

dyscrasia in various mental disturbances such as schizophrenia and epilepsy. Further, relative to specific effect upon psychic function, the author shows that the endocrines are here implicated in a threefold way: first, through primary influence upon brain development; second, through participation in the regulation of neural physiology; and third, by direct concern with affectivity. The development of this thesis constitutes the body of the book, and throughout in this development, the importance of the thyroid, directly and indirectly, through its influence upon other glands is especially stressed. The work is concluded with the presentation of three well detailed cases, illustrating the incidence of mental disturbance in association with actual pathology, thus myxedematous idiocy, an anxiety state with hallucinosis and a maniacal syndrome occurring in Basedow's disease. In this connection, Sicco submits a very interesting figure. Thus, based apparently upon personal experience but borne out also by the reports of Massaroti and of Parhon and Obodescu, he states that in 60 per cent of Basedow cases showing mental disorder requiring hospital care, the same was found to be either acute anxiety, mania or depression. The psychiatric diagnoses of the remainder were divided among epilepsy, schizophrenia, alcoholic psychosis, and certain other conditions not specified.

RAPHAEL.

Readings in Abnormal Psychology and Mental Hygiene. Edited by W. S. TAYLOR, Professor of Psychology in Smith College. With an Introduction by JOSEPH JASTROW, Professor of Psychology in the University of Wisconsin. (New York and London: D. Appleton and Company, 1926.)

"The selections to be found in this volume have been chosen for their usefulness as so many sections of a textbook for students. To that end, writings of primarily historical or controversial interest or author's points of view as such have been disregarded in favor of what seemed to be contributions to understanding phenomena." As such a compilation the book is a valuable and convenient reference book for psychiatrists as well as for those for whom it is primarily intended. A knowledge of its contents will enable the student of psychiatry to broaden his conceptions of the subject and to appreciate its relations to psychology and mental hygiene.

DUNTON.

A Textbook of Psychiatry for Students in Schools of Nursing. By ARTHUR P. NOYES, First Assistant Physician, St. Elizabeth's Hospital. (New York: The Macmillan Company, 1927.)

It is unusual to review a textbook in which there is so much to commend, and, at the same time, so much to criticize. The chief objection to this presentation is that it puts forward a single theoretical point of view, ignoring all others and clothing its theme in the language of *ex cathedra* dogmatism. For medical men who have a larger background of criteria and discrimination it would be not unsatisfactory; for nurses to accept it unreservedly as their stock in trade would be unfortunate.

The opening chapter, "Mind Development and Purpose," is simple, non-technical and altogether excellent. The second chapter, "The Structure of the Mind and Its Sources of Energy," sounds a keynote which is more or less adhered to throughout—somewhat too narrowly psychoanalytic and dogmatic interpretation of theory as fact. Later on we find statements (interesting in themselves and possibly true) presented as scientifically demonstrated but, surely, still mooted questions in the minds of many thoughtful psychiatrists. For instance, "the man with a prejudice against vivisection will be found to be instinctively a cruel person who has repressed his instinct of cruelty." Or, again, "the child who is instinctively cruel and is destructive of his toys and unkind to animals may in youth be an enthusiastic hunter and in adult life a successful surgeon." The chapter on "The Nature of Mental Diseases" closes with the following statement: "There is every reason to believe that in organic and toxic diseases of the brain the same conflicts, purposes and mechanisms are operative as in the case of psychogenic mental diseases, at least until such destruction of brain tissue has occurred that there is serious interference with conscious mental processes." Nevertheless, the author is not willing to go quite as far in the case of syphilis as he is with alcohol. Of the latter he writes: "Alcoholism is frequently the expression of certain unconscious trends which not rarely lead to mental disease," but, lues he dignifies into a real cause, "Syphilis is one of the most important causes of mental disease by producing organic changes in the brain tissue, its blood vessels or in the meninges." Those who are devoting a major portion of their lives to careful research into the nature of epilepsy, particularly from the standpoint of its chemical and metabolic aspects would probably object to the following statements: "In those epilepsies in which organic changes are found in the brain the mental make-up and reactions are the important elements, the lesion merely permitting the inherent epileptic character of the patient to express itself; but when with increasing age the environmental stress and demands multiply, some find it more difficult to subordinate their self-centered, egotistic tendencies to the requirements of the social group, and finally escape from the intolerable demands is sought in unconsciousness, a primitive pleasurable state comparable to the infantile or fetal state existing before the development of awareness." If this is a true explanation of the convulsion, why should it be restricted to epilepsy?

On the other hand, there is much of merit in this book. The clinical descriptions are good and sometimes they are excellent. There is useful and practical advice which if followed by nurses will ease the burden of those who are sick in mind. From these angles there are few textbooks of psychiatry for nurses which excel this one. Nurses should read it carefully, but it is advised that at the same time they familiarize themselves with other schools of psychiatry.

STRECKER.

In Memoriam.

ARTHUR PENDLETON HERRING, M. D.

Dr. Arthur Pendleton Herring, Commissioner of Mental Hygiene of Maryland, died at the Union Memorial Hospital, Baltimore, May 29, 1928, of carcinoma, aged 53.

Dr. Herring was born at Martinsburg, West Virginia, May 25, 1875. He attended the public schools in that city until 1893 when he entered Potomac Seminary at Romney, West Virginia. The next year he received private instruction in Latin and Mathematics from Newton D. Baker who later became Secretary of War under President Wilson during the World War. In the fall of 1894 Dr. Herring entered the Baltimore Medical College, at Baltimore, Maryland, and during his senior year served as interne at the Maryland General Hospital. He graduated in medicine in 1896 and was appointed prosector and Associate Professor of Anatomy and Physiology of the Nervous System, also Associate Professor in Nervous and Mental Diseases at the Baltimore Medical College, holding these positions until 1906. In 1898 Dr. Herring took a special course under Dr. Lewellys F. Barker in anatomy of the nervous system, and a course in pathology under Dr. William H. Welch, at the Johns Hopkins Medical School. Dr. Herring was an excellent instructor and during this period devised a method of teaching the macroscopical anatomy of the nervous system which he described in a paper published in 1902. Two years later he wrote upon Clay Modeling in the Study of Anatomy, further elaborating this subject.

For ten years, from 1900 to 1910, Dr. Herring served as assistant in the out-patient neurological department of the Johns Hopkins Hospital. In 1906 he took a course in neuro-pathology under Dr. Stewart Paton at the Sheppard and Enoch Pratt Hospital. That same year he held the following positions:

Associate Professor of Physiology and Neuro-pathology, and Associate Professor of Neurology and Psychiatry, College of Phy-

sicians and Surgeons (1906-1912), the Baltimore Medical College having amalgamated with the latter institution.

Neurologist-in-Chief, St. Agnes Hospital (1906-1928).

Visiting Neurologist and Psychiatrist, Mount Hope Retreat (1906-1907).

Following the death of Dr. George H. Preston, Executive Secretary of the Lunacy Commission of Maryland, Dr. Herring was appointed to that position. He attacked the problems confronting that body with great energy and by the use of a well-planned newspaper campaign, which showed the deplorable condition of many of the insane who were confined in almshouses, so aroused public opinion that at the next session of the legislature in 1910 an act was passed authorizing state care for the insane. By this piece of work Dr. Herring showed preëminently his genius for organization. He also organized several mental hygiene exhibits and conferences for the purpose of educating the general public. Perhaps the most elaborate of these was that held in 1913 at the Medical and Chirurgical Faculty where for a week addresses were made at afternoon and evening sessions by those interested in the advancement of the subject. In addition there was an exhibit of charts, etc., which also carried the intended message.

Dr. Herring was a vice-president of the Medical and Chirurgical Faculty for the year 1909, and chairman and business manager of the publication committee 1909-1911.

In 1915 and 1916 Dr. Herring made surveys of the state hospitals of South Carolina and Louisiana at the request of the National Committee for Mental Hygiene of which he was made a member.

In 1917 Dr. Herring entered military service as a major in the Medical Reserve Corps and was appointed Chief of the Neuro-Psychiatric Section of U. S. General Hospital No. 2 at Fort McHenry, Baltimore, holding this position until 1920 when by change of administration the hospital became U. S. Public Health Hospital No. 56. In fact, Dr. Herring's position and duties remained practically the same until he resigned in 1923 although the hospital later became U. S. Veterans' Hospital No. 56. The wards under Dr. Herring's charge were conspicuous for their cheerfulness and the absence of restraint. He showed a sympathetic understanding of the cases under his care and labored hard to bring about their recovery. Always having had an interest in occupational therapy he used it extensively for his patients.

In 1923 owing to a reorganization of state departments he became Commissioner of Mental Hygiene without any practical change in duties. This same year he was appointed Consulting Psychiatrist to the U. S. Marine Hospital at Baltimore, and Examining Specialist to the U. S. Pension Bureau.

In 1918 at the Chicago meeting of the American Medico-Psychological Association Dr. Herring was elected secretary, but before the meeting was over it was decided that it would be asking too much for him to serve so that Dr. H. W. Mitchell was elected. At this time, in addition to his military duties, Dr. Herring was serving as Secretary to the Lunacy Commission and as Secretary to the Coöperative Purchasing Commission, so that it was wise to save him from the additional burden.

Besides his membership in the American Psychiatric Association Dr. Herring was affiliated with the American Medical Association, Southern Medical Association, Medical and Chirurgical Faculty of Maryland, Maryland Psychiatric Society, Baltimore City Medical Society, Baltimore County Medical Association, National Committee for Mental Hygiene, Maryland State Conference of Social Work, American Legion, Alumni Association of the Department of Medicine of the University of Maryland.

While not a prolific writer there are 19 items on his bibliography. One of these, *The History and Progress of Anatomy*, was awarded the Alumni gold medal in 1899. His first paper, *The Roentgen Rays, showing the Practical Utility in Locating Hidden Bullets* was written in 1897. His last, shortly before his death, was entitled *An Illustrated Talk on the Present Facilities and a Plan for the Organization and Establishment of a Community Home and Infirmary for the Eastern Shore of Maryland*. This will care for the senile and pauper patients of this locality and is being carefully considered at present by the various county authorities.

Dr. Herring was married April 10, 1901 to Miss Agnes Louise Kinney of Staunton, Virginia. He was the father of five sons and one daughter. The home life was very intimate. An ardent fisherman, Dr. Herring early instructed his children in the mysteries of the piscatorial art and they were often his companions on fishing trips. A closer relationship was through music, as all of the children were instructed to play on one or more instruments, and Dr. Herring played the violin, at one time being a member of the

Doctor's Orchestra of Baltimore. While resident at Fort McHenry Dr. Herring organized his family into an orchestra whose playing gave much pleasure to the patients. After establishing his residence out of the fort the Herring Orchestra continued to give pleasure to others by giving concerts at hospitals and other institutions.

Dr. Herring will be missed also for his many activities in community life.

It is an interesting coincidence that he was succeeded by the son of the man whom he succeeded.

WM. RUSH DUNTON, JR.